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ABSTRACT

Thirteen papers which analyze the relations of work, schooling and family life in Philadelphia, Pennsylvania, from 1838 to 1920, are provided in this report. The papers (and their authors) are the following: (1) "The Transition to Adulthood Among White Philadelphians, 1850-1880" (Michael B. Katz and John Modell); (2) "Work, Household, and the Transition to Adulthood" (Michael B. Katz); (3) "School Attendance in Philadelphia, 1850-1900" (Michael B. Katz); (4) "Schools, Work, and Family Life in American History: A Research Agenda" (Michael B. Katz and David Hogan); (5) "The People's College: A Sociological Analysis of the Central High School of Philadelphia, 1938-1939" (David F. Labaree); (6) "Making It in America: Work, Education, and Social Structure" (David Hogan); (7) "The Growth of Public Education in Nineteenth Century Philadelphia: Aggregate Enrollments, Attendance and Attainment" (David Hogan); (8) "Philadelphia High School for Girls, 1850-1880: Enrollment and Achievement (David Hogan); (9) "Philadelphia High School for Girls, 1901-1922" (David Hogan); (10) "Enrollment, Achievement, and Curriculum Choice in Philadelphia High Schools, 1885-1940" (David Hogan); (11) "Enrollment and Achievement at Five Philadelphia Grade Schools" (David Hogan); (12) "Data Base: School and Census Data Sets" (David Hogan); (13) "Work: Case Studies of Philadelphia Firms" (Walter Licht). (KH)

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THE ORGANIZATION OF WORK, SCHOOLING AND FAMILY LIFE IN PHILADELPHIA, 1838-1920

FINAL REPORT

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Working Paper No. 1

THE TRANSITION TO ADULTHOOD AMONG WHITE PHILADELPHIANS, 1850-1880

Michael B. Katz

and

John Modell

Working Paper, "Organization of Schools, Work, and Family Life in Philadelphia" Project

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The human life course is shaped by culture and history as well as by biology. Aside from birth, maturation, aging, and death, there is little inevitable about the shape of human lives, and in Western societies even biological phenomena, such as the age at menarche and the life span, have changed remarkably during the last century. Among the most plastic phases of the life course in recent centuries has been the transition to adulthood. For the definition of adulthood is shaped by both the organization of work and beliefs about social relations and behavior. As relations between families, work, and social institutions alter, the way in which young people become adults also changes. (1)

It is easier to state the general propostion that the life course is partially contingent on culture and history than it is to show the exact nature of the relations and the processes through which they change. One reason for the difficulty is the problem of describing the experience of entire populations. After all, most young people have not left systematic records of their experiences. Thus, it is necessary to start the historical reconstruction of transitions to adulthood by using the quantitative measures available in censuses, vital statistics, and other sources to lay out the major dimensions and show how they varied by time, sex, class, and ethnicity.

Even the relatively limited amount of historical research already done on the transition to adulthood shows that it changed during the early years of industrialization in the nineteenth-century. Young people began to live with their parents much longer than before and to stay at home for several years after they had started to work, and young women increasingly entered industrial jobs. In their study of Hamilton, Ontario, Katz and Davey showed how this trend cut across class lines, although business-class children went more often to school and working-class children to work. Young people who attended school were directly dependent on their parents; those who worked gave most of their income to their families. Hence, they, too, remained dependent while they lived at home. Thus, the increased time that children lived with their parents initiated a period of prolonged dependence increasingly reinforced by age-segregated institutions. This prolonged, institutionlized dependence, which underlies the social basis of adolescence, has persisted until our own time even though the exact form that dependence takes has changed in some respects. Indeed, the new psychological theory of adolescence advanced in the early twentieth-century by G. Stanley Hall appeared after the demographic transition to prolonged dependence was well underway.(2)

By the late twentieth-century the shape of the transition to adulthood had begun to alter. Modell, Furstenberg, and Hershberg pointed out that in the late nineteenth-century the complete transition to adulthood took a relatively long time. The key elements in the transition - leaving school, starting to work, marrying, establishing a household - all occurred in a reasonably well-defined sequence and were contingent on each other. By 1970, however, the spread between the initial age of the various stages in the transition had shrunk, and, as the transition became more compressed, it lost much of its sequential and contingent character because events within individual lives (such as attending school and marriage) often overlapped.(3)

The older pattern was in place by 1880; the new one had emerged by 1970. However, just when and why the shift occurred and how the timing of changes in the transition to adulthood varied by sex, class, and ethnicity remain obscure. Thus, one goal of the "Organization of Schools, Work, and Family Life. . ." project is to trace the history of these transitions in as great detail as possible. Although we will ask these questions for the entire population of the city between 1850 and 1900, at this point we can offer initial answers only for whites between 1850 and 1880.(4)

The measures used here were developed by Modell et al to study five key transitions with the Philadelphia Social History Project's manuscript census sample of whites in 1880 and aggregate census statistics from 1977. The measures were:

> 1. The PREVALENCE of a transition. . . the proportion of a population (ignoring mortality) which experiences a given transition. . . .
> 2. TIMING. . . typical points in the life course at which transitions occur. . . .
> 3. SPREAD. . . the period required for a fixed proportion in a population to undergo a particular transition. . . .
> 4. The AGE-CONGRUITY . . .the degree of overlap of their spreads. A population will undergo a pair of congruous transitons over the same period. If the transitions are incongruous, the population first accomplishes one

> transition, then the next. This dimension is a joint property of a pair of aggregate distributions, and does not refer to the closeness in time of transitions of the individual level. (5) INTEGRATION. . . a summary measure of individual-level relaionships. This dimension refers to the degree to which status transitions are contingent upon one another at the individual level, apart from their degree of age-congruity.(5)

In this analysis measures have been modified somewhat. The spread is measured by the ages at which the first and last fifth made the transition. Also, figures for individual ages are usually based on three-year moving averages. The reason for these modifications is the small numbers in some cells which can distort the results.

Between 1850 and 1880 the industrialization of Philadelphia had a major impact on the transition to adulthood among both young men and women. As a result of the availability of more jobs the relations between home, school, and work changed for each major ethnic and occupational group within the city. Although the impact of industrialization cut across gender lines, it affected the adolescence of young women even more than that of young men.

The data here have certain limitations which should be made clear at the outset. First, it is not possible to know the occupation of the parents of children not living at home or, before 1880, their birthplace. Thus any analyses which require parental occupation and birthplace only can be carried out prior to 1880 for children still living with their parents. Second, in 1850 no occupations were listed for anyone less than sixteen years old and none for females of any age. Third, this analysis makes inferences about individual experience based on cross-sectional analysis. We have not traced individuals over time. Thus, for example, we assume that young people who were 15 years old in 1850 would leave home, start work, and marry at about the same ages as those who were 25 years old in the same year. At present we have no way of checking how accurately cross-sectional data reflect individual experience.(6)

In general, the trends in the transition to adulthood cut across birthplace groups. (Table 1) This points to the similarity of the forces affecting the life experience of all the young people in the city. The sharpest general birthplace difference separates the native born, whatever the birthplace of their parents, from the foreign born young people. As Katz found in Hamilton and Buffalo, the native born children of Irish and German immigrants behaved much more like the children of natives than did the foreign-born children of immigrants. Although these differences persisted into adulthood -- there were sharp variations in marital fertility between the same groups, for instance -- it is not at all clear what factors led to the clear and consistent distinctions between the native and foreign born children of immigrants.(7)

By and large foreign born children went a little less often to school and a little more often to work, but the differences were small. At some point most young men did go to school and most worked, too, and most young women attended school. (Table 2)

However, as Tables 1 and 2 show, the age at which young men left school dropped a bit during these years as did the age at which they entered work. Most young people appear to have entered work between the ages of 13 and 15 in 1880 compared to between 15 and 16 in 1860. There was a small increase in the pace (not shown on Table) at which they made the transition into work but no consistent change in the pace at which they left school.

What is remarkable is the great increase in the prevalence of young women who entered the labor force. For instance, (Table 3) the proportion of native-born young women still living with their parents who had entered the wage labor force by the time they had turned 21 increased from 30% to 52% among the native born and from 65% to 79% among the Irish. Prior to the opening of industrial jobs most employed young women worked as domestics and lived away from home. Thus, it is possible that the increase in the employment of young women living at home represents a shift away from domestic service and into industrial work. The actual proportion of young women who worked may not have changed very much at all. Indeed, this was the case in Hamilton, Ontario, where young women deserted domestic service in droves as soon as industrial jobs opened. However, as Table 2 makes clear, all young women began to enter the labor force much more often during these years. In this respect there is an important contrast between Philadelphia and Hamilton. In Philadelphia the increased proportion of young women who were wage earners probably reflected the availability of more factory jobs, especially in the textile industry, which never was very large in Hamilton.(8)

Even though they entered the labor force somewhat earlier, young people, especially young men, were living about two years longer at home in 1880 than in 1850. (Table 4) Although they entered the more adult status of wage earner a bit earlier, they stayed children longer. The changing relations between when young people started to work and where they lived points to a major realignment in their life course during the early years of industrialization. Native born young women also were living at home about two years longer, although differences were not marked among the German and Irish born. Movement out of one's parents' house, however, was a fairly leisurely affair whose pace varied considerably within each birthplace group. Indeed, between six and ten years separated the age at which the first and last fifth of the children within each birthplace group left their parents home. This was, by and large, more than twice as long as the period during which the first and last fifth entered work, which was usually between three and four years. Not only in Philadelphia but in Hamilton, Ontario, and in other places that historians have studied, young people began to live longer at home during precisely these years. However, in Hamilton in 1850 they left home earlier than in Philadelphia, probably because there were fewer jobs avaialable in the Canadian city. Just why young people began to live longer at home remains something of a puzzle, and we will return to the question of explanation shortly.(9)

However, one important ethnic distinction remains to be pointed out. (Table 5) Germans were the most likely people to marry. (Marriage here is indicated by the proportion living as household heads or spouses.) There was not much difference in the age at which different birthplace groups married, but the prevalence of marriage by age 38 was consistently higher among the Germans. In Buffalo and rural Erie County, New York, in the same period Germans usually married youngest. The reasons for the distinctive German behavior remain obscure. Perhaps they lie in the contrast between immigrants' experience in Europe and America. The modest success which German artisans enjoyed in America, the relatively larger size of their farms here, and the lack of legal impediments may have given them the confidence and ability to marry earlier.(10)

Among young men school attendance in Philadelphia followed a pattern similar to its trajectory in Hamilton, Ontario. It rose between 1850 and 1860 and then dropped between 1860 and 1870. (Table 2) In Philadelphia it rose a little bit again in the next decade. (In Hamilton 1880 data were not avaialable at the time of the analysis.) Very likely young people went to school more in 1860 because fewer jobs were available during the economic depression of the late 1850's. By 1870, however, many jobs for teenagers had opened up in new and expanding industries. Young women, too, were employed very much more often, but they also started to go to school more as well. In 1850 young women usually left school a little earlier than young men; by 1880 they stayed a bit longer.

Trends in school leaving and job entry varied by the occupations of children's fathers. (Table 6) Among men the median age of entry to work dropped among the sons of all occupational groups between 1860 and 1880, but class differences in school attendance were increasing at the same time. In 1860 the main difference in school attendance separated the children of professionals and proprietors from all the other groups, except unskilled laborers whose children left earliest. Twenty years later children of the business class (professionals and proprietors, white collar workers, masters and manufacturers) generally stayed longer in school than children of the working class. Young women, as already mentioned, started staying longer in school than young men from the same social background. The age at which young women from different backgrounds entered work stayed about the same or increased slightly. However, the prevalence of work (Table 7) among the daughters of the working class increased sharply while among the daughters of the business class it remained about the same or declined. For example, the prevalence of work among daughters of masters and manufacturers dropped from 54.9% to 40.2% during these years while among the daughters of skilled workers it rose from 33.3% to 56.6%. These figures do not account for the great proportion of young working women who were domestics and lived away from their families. If they could be included, the disproportion between classes would be even greater. Thus, it was working class girls who accounted for almost all of the great increase in female wage-labor among young women who lived with their parents during these years. Although the life course of young people from each major social class began to change, the increased impact of class on the transition to adulthood reflected the crystallization of social relations during the early years of industrialization.

Finally, one effect of these shifts between school and work among young men was to sharply reduce the proportion of older teenagers who were neither in work nor in school. (Table 8) For instance, among the 17 year old sons of clerical workers the proprortion listing no job or school attendance dropped from 24.2% in 1860 to 16.9% twenty years later; among the sons of unskilled workers the decrease was from 26.7% to 15.8%. It is also important (though predictable) to point out that children who lived in female-headed households, especially when their mother was unskilled or not working, were very likely to enter the labor force early. Among girls who lived with their parents (and remember the inclusion of servants would greatly accentuate these trends) young working-class women were more also more often in work or school. For instance, the proportion of 17 year old daughters of professionals and proprietors neither in work nor school actually rose from 57.2% to 70.7% while the share of the daughters of skilled workers dropped from 60.1% to 49.6%. The high proportion of young people neither in school nor work in the middle of the nineteenth-century highlights the crisis of youth in commercial cities. Without long, regulated apprenticeships, with the decline of male domestic service, without industries which needed large numbers of young semi- or unskilled workers, young people had poor job opportunities. At the same time there were few schools for young people over the age of thirteen or fourteen, and many of them had little to do except wander the streets looking for odd jobs or, if contemporaries are to be believed, hange out on wharves and street corners, annoy passersby, and turn to petty crime.(11)

There was, thus, a pattern to the transition to adulthood in Philadelphia during these years. Young people were starting to work earlier and staying at home longer. Young working class women, especially, were entering industrial work in much greater numbers. At the same time the school attendance of young men rose during the depression and then fell a bit while the attendance of young women rose and surpassed that of the young men. Within this pattern there were some distinctions between the native-born, including the children of immigrants, and the German and Irish born young people, and there were other class differences which operated in expected ways. It is clear from these trends, which support other work with similar data, that school attendance did not climb in a secular fashion. The history of attendance among older children is not one of a steady increase accompanying expanded facilities. Rather, it varied with economic conditions and the availability of work.

Indeed, we believe that the history of the labor market holds the key to interpreting the patterns in the transition to adulthood, especially in periods when children were the expected secondary wage earners in family economies. Children were probably more often able to stay at home during their early working years when industrial expansion brought more jobs within walking distance of where they lived. After all, in walking cities people had to live near where they worked. Prior to the development of large, industrial work settings there were relatively few jobs within a mile or so (the usual limit which people were willing to travel daily by foot) of most working class homes. Thus young people often were forced to leave home when they wanted to find work. To working class youngsters industrial work probably had great appeal. It offered increased independence and wages that seemed high. Longer schooling did not help young men and women get industrial jobs, and they undoubtedly left just as soon as they thought they could get work. The school attendance of young women rose partly because at that time they had fewer industrial opportunities than young men and, also, because some of them probably hoped to enter the one genteel occupation opening to women in ever larger numbers: namely, teaching. Within this pattern the one major finding that remains inadequately explained and must be interpreted differently is the distinction between the native and foreign born children of immigrants.(12)

No simple statements can be made about the pace of the transition to adulthood. If it is measured by entry into the workforce, then it shortened during these years. If it is measured by the length of time young people lived with their parents, then it lengthened. In some senses it was sequential. School and work by and large followed each other; so did leaving home and marriage. In other respects though it became less integrated as children lived with their parents during their earlier working years. Indeed, this mixed status of worker and child was one in which young people stayed for a relatively long time, native born about seven or eight years and for Irish and Germans about four or five.

Thus, the major significance of the transition to adulthood was its articulation with the economies of working class families. For as children lived longer with their parents, working class families were able to increase their incomes. Because the income of one working class wage earner usually was not enough to support a family, let alone to save, the income from children meant a margin of security, perhaps the price of house. It could be argued that by encouraging children to leave school earlier the expansion of industrial jobs constricted the opportunities of individuals. But it could just as well be argued that by making it possible for children to start work earlier and live at home longer industrialization gave a suprising economic boost to working class families.

Of course, the transition to adulthood is not a real event. It is a construct used to turn a series of events into process. Its major usefulness is the way in which it combines discrete aspects of human lives into patterns which can be studied, compared, and related to other elements of culture and society. But it is critical to remember that the events which today signify progress toward adulthood did not have an identical meaning to people in earlier times. Thus, leaving school and going to work may not have signified adulthood to young men and women in the nineteenth century. Rather, they shared in a broad cultural consensus that children should contribute to their family's economy. Thus, they did not expect a job to emancipate them from their families, and there was no paradox in the combination of earlier work and prolonged residence with parents that marked the experience of young people during early industrialization.

There is one more important point to make about this initial sketch of the transition to adulthood during early industrialization: namely, that adolescence as it is commonly understood today is a historical product. Neglecting that very simple observation can constrict the horizons of social and educational reform by focussing attention solely on the institutions through which adolescents pass rather than on the nature of the transition to adulthood which, despite our inattention, may already have begun to change again by itself.

1 For further elaboration of the life course perspective in history see, Tamara K. Hareven, "Introduction: The Historical Study of the Life Course" and Glen H. Elder, Jr., "Family History and the Life Course" in Tamara K. Hareven, ed., TRANSITIONS:THE FAMILY AND THE LIFE COURSE IN HISTORICAL PERSPECTIVE (New York: Academic Press, 1978),pp.1-64.

2 Michael B. Katz and Ian E. Davey, "Youth and Early Industrialization in a Canadian City," in TURNING POINTS: HISTORICAL AND SOCIOLOGICAL ESSAYS ON THE FAMILY, ed. John Demos and Sarane Spence Boockock (Chicago: Univ. of Chicago Press, 1978), pp. 839-880; Joseph F. Kett, RITES OF PASSAGE: ADOLESCENCE IN AMERICA 1790 TO THE PRESENT (New York:Basic Books, 1977); Dorothy Ross, G. STANLEY HALL: THE PSYCHOLOGIST AS PROPHET (Chicago: Univ. of Chicago Press, 1972).

3 John Modell, Frank F. Furstenberg, Jr., Theodore Hershberg, "Social Change and Transitions to Adulthood in Historical Perspective," in Theodore Hershberg, ed., PHILADELPHIA: WORK, SPACE, FAMILY, AND GROUP EXPERIENCE IN THE NINETEENTH CENTURY (New York:Oxford Unv. Press, 1981), pp. 311-342.

4 Analysis of the transition to adulthood among blacks and in 1900 is underway.

5 Ibid., pp. 317-318.

6 Robert V. Wells, "On the Dangers of Constructing Artificial Cohorts in Times of Rapid Social Change," JOURNAL OF INTERDISCIPLINARY HISTORY, IX:1 (Summer 1978), pp. 103-110.

7 Michael B. Katz and Ian E. Davey, "School Attendance and Early Industrialization in a Canadian City: a Multivariate Analysis," HISTORY OF EDUCATION QUARTERLY, 18:3 (Fall 1978), pp. 271-294.

8 The Hamilton data are discussed in Michael B. Katz, Michael J. Doucet, and Mark J. Stern, THE SOCIAL ORGANIZATION OF EARLY INDUSTRIAL CAPITALISM (Cambridge: Harvard Univ. Press, 1982)

9 Susan G. Hirsch, ROOTS OF THE AMERICAN WORKING CLASS: THE INDUSTRIALIZATION OF CRAFTS IN NEWARK, 1800-1860 (Philadelphia: Univ. of Pennsylvania Press, 1978), p. 72.

10 Katz, Doucet, and Stern, SOCIAL ORGANIZATION, ch. 8.

11 On the crisis of youth see, Michael B. Katz, THE PEOPLE OF HAMILTON, CANADA WEST: FAMILY AND CLASS IN A MID-NINETEENTH CENTURY CITY (Cambridge:Harvard Univ. Press, 1975), pp. 307-308.

12 On the eagerness of teenage boys to take industrial work see Howard G. Burdge, OUR BOYS (Albany, N.Y.: J.B. Lyon, 1921) and the marvelous British novel by Walter Greenwood, LOVE ON THE DOLE. A TALE OF THE TWO CITIES (London: J. Cape, 1933).

TABLE 1

Median Age at School Departure and Labor-force Entry
1850-1880: Whites only
(Based on Children Living with Parents only)

	Native White		Native born German Parent		Native born Irish Parent		German born		Irish born	
Males	School	Work	School	Work	School	Work	School	Work	School	Work
1850	14.9	N/A	14.7	N/A	14.7	N/A	14.0	N/A	13.3	N/A
1860	15.9	16.5	14.8	16.1	14.6	16.0	13.9	15.4	13.8	15.1
1870	15.0	15.5	14.4	15.0	15.0	15.4	13.5	13.3	14.4	15.9
1880	14.9	15.0	13.6	14.0	14.3	14.9	12.8	16.3	14.1	14.6
Females										
1850	14.7	N/A	14.3	N/A	14.6	N/A	13.7	N/A	13.2	N/A
1860	15.2	14.9	14.7	14.6	14.4	15.5	13.2	15.2	13.5	13.7
1870	16.2	14.6	15.5	14.2	14.5	14.5	13.6	15.1	12.9	13.2
1880	15.2	15.0	13.4	13.7	13.7	14.6	13.0	13.0	12.1	13.4

TABLE 2

All Philadelphia Whites:
Transition Out of School and Into Work
(based on single year data, not moving average)

MALES

age	% At School 1850	1860	1870	1880	% in Labor Force 1850	1860	1870	1880
9	62.5	80.4	74.6	86.5		0	0.2	0.5
10	76.8	82.2	76.3	90.1		1.2	1.4	0.8
11	74.3	79.2	76.0	88.1		1.3	3.1	2.8
12	68.1	80.2	73.4	76.9		1.7	7.3	10.3
13	65.4	71.8	61.5	65.6		3.0	11.3	20.3
14	44.8	48.5	49.7	47.7		8.3	22.1	36.5
15	30.5	42.5	35.4	37.0	35.0	23.1	41.0	45.3
16	17.4	21.3	18.3	17.0	56.5	41.6	56.9	67.5
17	4.9	10.3	10.0	9.8	72.1	63.4	70.5	76.2
18	3.1	3.5	2.9	7.5	81.9	74.2	80.1	77.8
19	1.5	1.7	2.9	2.9	82.6	79.1	87.9	83.3
20	0.3	0.6	1.6	0.6	88.3	82.6	86.8	88.4
21	0.5	0	0.6	0.7	89.6	91.1	89.9	88.7
22	0.3	0.4	0.9	0.7	90.8	91.6	90.8	88.1
23	0	0	0	0.4	92.4	93.8	91.2	89.1
24	0.8	0	0	0	92.9	95.2	90.9	91.4
				FEMALES				
9	76.5	79.9	71.9	88.5		0.2	0	0.2
10	73.5	78.3	74.1	91.3		1.2	1.3	0.7
11	76.1	76.1	71.3	80.0		1.2	1.7	4.5
12	63.9	75.0	72.2	77.6		3.4	5.9	10.1
13	62.3	64.6	63.7	70.0		4.5	8.1	11.4
14	42.1	51.5	48.4	51.4		8.3	15.6	21.2
15	30.7	33.6	32.5	31.2		22.7	29.0	30.3
16	13.1	14.8	18.8	17.8		29.5	35.5	45.6
17	7.7	7.8	6.5	9.8		32.4	43.6	46.1
18	3.0	4.9	4.3	4.0		37.6	44.8	53.2
19	0.8	1.5	2.0	0.5		41.9	45.6	51.3
20	0.5	0.2	1.0	0.4		38.1	46.7	56.8
21	0	0.9	1.1	0.3		36.8	46.5	53.0
22	0.6	0.7	1.1	0		34.5	40.2	50.4
23	0	0.2	0	0		31.5	35.7	44.9
24	0	0.2	0	0		25.0	39.2	43.4
Median								
Male	14.4	15.1	14.8	14.2	15.5	16.3	15.3	15.0
Female	14.3	14.6	14.7	14.2		14.9	14.6	14.8
Spread (20th-80th percentile)								
Male	3.0	3.1	3.4	3.5		3.7	3.7	3.8
Female	2.8	2.8	3.0	3.4		3.2	3.0	3.0

TABLE 3

Prevalence of Labor-force Entry by Age 21 1860-1880: White Young Women Living with Parents

	Prevalence Native White	Native born German parent	Native born Irish parent	German born	Irish born
1860	27.9	30.0	45.3	48.5	64.8
1870	38.9	38.5	52.0	57.7	77.5
1880	48.8	52.4	60.6	72.2	79.4

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TABLE 4

Median Age Ceasing to be Child and Becoming Household Head or Spouse, 1870-1880: Native born, German born, and Irish born males and females

	Native born Cease child	Household Head/Spouse	German born Cease child	Household Head/spouse	Irish born Cease child	Household Head/spouse
Males						
1850	21.5	26.0	17.4	26.7	17.6	24.4
1860	23.4	25.8	18.9	24.3	20.3	24.9
1870	22.8	26.2	19.1	25.8	19.5	25.5
1880	23.6	26.1	19.8	25.3	19.6	24.6
Females						
1850	19.6	23.1	17.2	21.1	16.1	26.3
1860	21.1	22.7	17.8	21.8	17.1	24.4
1870	21.1	24.0	17.3	22.0	16.3	25.4
1880	21.8	25.3	17.8	23.9	15.8	24.7

TABLE 5

Prevalence of Becoming Household Head or Spouse 1850-1880 Native born, German born, and Irish born Men and Women

	Native born	German born	Irish born
Males			
1850	80.1	84.8	79.2
1860	76.7	88.7	90.9
1870	77.5	90.4	83.8
1880	76.7	85.5	80.4
Females			
1850	75.9	84.7	81.8
1860	75.2	89.5	78.0
1870	77.4	94.8	80.2
1880	74.3	90.6	83.3

TABLE 6
Median Age of Leaving School and Entering Work by Parental Occupation 1860-1880

		Median Age Leaving School			Median Age With Job		
		1860	1870	1880	1860	1870	1880
Parental Occupation							
Professional/Proprietor	M	16.1	15.7	15.2	17.0	16.9	15.6
	F	15.1	15.8	15.7	15.5	15.1	15.4
Clerical	M	14.8	15.6	13.3	16.5	15.8	14.6
	F	14.8	15.9	15.8	14.9	a	16.6
Master/Manufacturer	M	14.7	15.6	15.2	16.1	15.6	15.1
	F	14.7	15.9	16.3	14.5	15.7	14.5
Skilled Worker	M	14.8	15.1	14.1	16.2	15.4	14.4
	F	14.5	14.9	15.0			
Semi-skilled Worker	M	14.8	14.3	14.1	16.3	15.4	14.6
	F	14.3	14.8	15.3	14.6	14.7	14.9
Unskilled Worker	M	13.5	14.6	13.6	15.6	15.2	14.5
	F	14.1	13.9	14.6	14.0	14.5	14.6
Mother Domestic or Unskilled	M	13.2	13.5	13.6	16.8	13.8	13.5
	F	13.3	14.5	15.3	13.5	15.0	16.9
Mother Proprietor or Professional	M	14.0	13.1	12.9	15.4	14.6	a
	F	14.5	14.6	13.2	14.0	15.8	15.1
Mother No Occupation	M	14.0	14.1	12.7	16.1	15.5	13.1
	F	14.7	14.1	15.2	14.1	15.2	15.9

a = too few cases

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TABLE 7
Prevalence of Labor Force Entry by Age 21 By Parental Occupation 1860-1880

		Prevalence		
Parental Occupation		1860	1870	1880
Professional/ Proprietor	M	94.3	91.4	79.4
	F	49.6	14.3	30.2
Clerical	M	95.9	83.0	92.9
	F	42.6	a	48.8
Master/Manufacturer	M	90.0	88.8	86.3
	F	54.9	19.6	40.2
Skilled Worker	M	94.0	90.7	90.2
	F	33.3	41.0	56.6
Semi-unskilled Worker	M	89.8	91.7	87.7
	F	40.0	47.0	62.1
Unskilled Worker	M	94.3	92.9	93.6
	F	46.5	57.1	74.8
Mother Professional or Proprietor	M	100.0	100.0	88.9
	F	65.0	86.9	75.6
Mother Domestic	M	87.0	83.3	a
	F	74.7	63.0	80.3
Mother No Occ.	M	99.4	99.2	87.9
	F	48.1	56.0	65.0

a= insufficient cases

TABLE 8
Proportion of 17 Year Olds Neither in School Nor with a Job 1860 and 1880 by Parental Occupation (Based on 3 year moving average)

		%	
		1860	1880
Parental Occupation			
Professional/Proprietor	M	24.2	16.9
	F	57.2	70.7
Clerical	M	30.8	19.5
	F	59.7	69.2
Master/Manufacturer	M	21.6	16.4
	F	59.1	46.3
Skilled	M	32.3	13.3
	F	60.1	49.6
Semi-skilled	M	28.8	15.4
	F	56.3	31.3
Unskilled	M	26.7	15.8
	F	58.8	24.8
Mother Proprietor or Professional	M	17.9	14.3
	F	35.6	62.8
Mother No Occupation	M	30.3	20.4
	F	56.6	37.4

Working Paper No. 2

Work, Household, and the Transition to Adulthood

Michael B. Katz
December, 1982

Working Paper, "Organization of Schools, Work, and Family Life in Philadelphia, 1838-1920," project

The first working-paper in this series argued that historical forces fundamentally reshaped the life course of young people in early industrial Philadelphia. Through combining the key events in the years between puberty and marriage into a construct called the transition to adulthood, we showed how the experience of young white people in Philadelphia began to alter between 1850 and 1880. The paper showed how the prolonged co-residence of children with their parents meant that young people spent several years in a status in which they were at the same time workers and children. It pointed, too, to the implications of an increased number of wage earners for working-class families. And, finally, the paper showed how the experience of young women changed even more than that of young men as working-class women entered the labor force in much greater numbers. The great influence on these developments, we suggested, were changes in the labor market during early industrialization.

Here I want to continue exploring the same themes. This paper lays out a great deal of complex data for the same groups (whites, 1850-1880) and adds data concerning blacks and data from the 1900 census sample. Its measures are different from those used in the preceding paper. They are much simpler, by and large descriptive statistics showing the proportion of young people in various statuses. In contrast to the former paper, they do not use moving averages. These less elegant measures will reinforce the earlier

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image of prolonged co-residence and increased female labor force participation. They will show fundamental differences in patterns for blacks and whites, which reinforce the general argument about the relation between prolonged co-residence and the development of industrial jobs. Demographic forces -- migration patterns and the balance between young men and women -- added to the influence of the labor market in re-ordering the transition to adulthood. By 1900, the imprint of a new pattern suited to an age of mature industrialization already had begun to emerge.

The paper starts will a general review of the labor force, the essential context for changes in the key events during the transition to adulthood. Next, it detours into the history of household structure, a key component of the setting for the transition to adulthood. Then, the paper will turn to the key events in the lives of young people.

I. LABOR FORCE

This section is a first look at the complex question of the kind of work young people did in the last half of the nineteenth-century. It is an enormously important topic that requires a great deal more precise work. These are some of the questions I wanted to at least touch: did young people move into different sectors of the labor force over time? Were there characteristic entry level jobs out of which young people switched after a few years? Was there a sector of "dead end" jobs into which young people went? What were the distinctions in the labor

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market experience of blacks and whites? Is it possible to identify segments within the labor market and, if so, on what were they based? Were there important distinctions in the labor market experience of whites from different ethnic backgrounds and between blacks born in the North and South? Did the labor market experience of young men and women have the same sort of history?

The fundamental problem with the analysis as it is presented here is the overly general character of the occupational categories. In order to get an overview, I used what is known as the "FUNC" codes developed by the Philadelphia Social History Project. These represent the recoding of occupations into a large number of "functional" categories, and they make a fairly fine-grained classification. However, as I worked with the data, my sense was that even these detailed categories missed much of the detail needed for an analysis of the work experience of young people. For this purpose,I think, it will be necessary to go back to the original statement of occupation on the census and to develop a different mode of classification appropriate for young people. Even the "FUNC" codes, of course, were far too detailed to use in statistical analysis. So I collapsed them into several categories. There were not enough distinct occupations within the business class; so I collapsed all of them into a general white collar category. I also highlighted some trades in order to look at expanding sectors of the economy (metals and machines), traditional crafts undergoing technological change (shoemaking,

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textile and clothing), crafts without much technological change (building and construction), and an expanding sector of the economy (transportation). I also tried to isolate some "dead end" types of jobs -- errand boy, "boy", messenger, pedlar -- to see if there was a "boy labor" sector. Although the classification scheme is only partially successful, some trends do emerge. (Remember that no occupations were listed for children under 16 before 1860 and none for women before 1860.)

Table 1 gives an overview of white male employment by age. It is based only on young people employed, who, recall, at younger ages were only a minority of their age groups. Thus, the table asks, for example, what proportion of employed 16 year olds were in white collar work? (NOT what proportion of all 16 year olds were in white collar work?) First, there were few young men in white collar work before the age of 15. White collar worked peaked (31% and 30%) at the ages of 15-16 in 1860 and 1880 and at 17-20 in 1900 and then dropped off a bit. This probably reflects the inclusion of some dead end, "boy labor" types of jobs that slipped into the white collar category.

After the age of 15, the proportion of employed young men in the general crafts category remained fairly stable, around 20%. However, men under the age of 21 were more likely to work in textiles and clothing in 1880 than were older ones. Between 1860 and 1880, the proportion of 15-16 year olds in textiles and clothing rose from 6% to 14% and of 17-20 year olds from 5% to

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14%. However, 1880 was the peak year, and by 1900 the proportion had dropped back to 9% for both of the age groups. Perhaps younger men were needed for semi-skilled and unskilled work in the early stages of the industrial expansion of textile and clothing, but this is only speculation at this point.

Among men 26-30 there were a few shifts between 1860 and 1900. The proportion in metals and machines increased from 5% to 9%. Although this is almost a doubling, it still is less than I had expected. The share in shoemaking and in textile and clothing decreased (from 3% to .5% and from 11% to 7%, respectively). Also, the proportion who were unskilled laborers decreased from 21% to 13%. By contrast the proportion who could be classified as semi-skilled (which probably included much factory work) increased from 3% to 5%. The proportion in white collar work increased a bit, too. Overall, there was some movement away from unspecified labor, out of older crafts, and into newer sectors of the economy. But these figures do not point to dramatic shifts. It is possible, though, that they are merely the tip of the iceberg, masking much greater changes in the same direction that more precise occupational descriptions would reveal.

There is, interestingly, not much evidence of age-shifts between types of occupations, that is, from work as laborer into the crafts or white collar work. The one exception is "dead end" work, of which more later. But by and large young people do not appear to have made major shifts out of the sorts of work in which

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they found themselves between 17 and 20. Before the age of 16 or 17 there does appear to have been something of a "boy labor" market, and there may have been dead end jobs in shoes and in textile and clothing.

It is possible to get a better sense of the relation between age and type of work by using an index of occupational clustering. (Table 2) The index shows the relative clustering of age groups into certain kinds of work. It is derived by dividing the proportion of white males in a given age group into the proportion of young people of the same age in an occupational category and then multiplying the result by 100. Thus, if 10% of white collar workers were 13-14 years old and 20% of all white male workers were 13-14 year old, the index would be 50, indicating a low clustering.

The index clearly shows the existence of a "boy labor" market of dead end jobs. These jobs were heavily concentrated among the young. For example, in 1860 the index was 174 for 13-14 year olds. In 1880 it was 320 for 15-16 year olds and in 1900, 544. By age 21-25 it was well below 100. The young were not consistently over-represented in any other category.

Movement into work as laborers really began around age 17 in 1860 (index 80) and somewhat later in 1880 and 1900 (index 89 and 98 for 17-20 year olds). At ages 26-30 in all three years laborers were over-represented, that is, they had index scores about 100. In white collar work, too, the index scores began to hover around

100 at the ages 17-20. Even more than with white collar occupations, clustering in metals and machines started at the ages 17-20. In 1900, for example, the index rose from 63 to 115 between the age groups 15-16 and 17-20. In the general crafts category, the index rose notably at the ages 17-20 in each decade. Indeed, it would seem that the years between 17-20 were the period when men began to establish themselves in the kinds of work in which they stayed. Or, to put it another way, in many cases employers may not have wanted to hire people under the age of 17.

Exceptions occurred among transportation and the declining trades. In transportation and in building and construction real clustering began only at ages 26-30. Maybe people moved into these jobs out of other sorts of work. It is hard to know. As for the trades undergoing deskilling, in 1860 there was an over-representation in shoemaking at ages 21-25 and 26-30, but by 1880 the index approached 100 at 15-16 and peaked at 17-20, declining thereafter; and in 1900, the peak occurred at 15-16. Clearly, it looks as though shoemaking became an entry level form of boy labor, something to be escaped if at all possible. The pattern in textile and clothing was somewhat similar. The index peaked at 17-20 in 1860 and stayed high. In 1880 it was higher at 13-14 and 15-16, peaking again at 17-21 and then dropping to 67 by ages 26-30. In 1900, however, it peaked at 21-25. Perhaps the industry went through two cycles. Between 1860 and 1880 a general deskilling brought an overrepresentation of younger boys who left

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between the ages of 17 and 20. Between 1880 and 1900 changes in the industry began to make it once again more attractive to older young men. However, again, this is only speculation.

Patterns among semi-skilled and specified unskilled work, much of which, I think, was factory labor, were interesting. In both years the index rose with age, but the age at which the increase started was later in each decade. For example, the index for 21-25 year olds was 116 in 1860, 99 in 1880 and 73 in 1900. By the age of 26-30, however, there was an overrepresentation in each year: the scores were 124 in 1860, 142 in 1880, and 127 in 1900. It could be that as this category of work became more identified with industrial jobs, either employers or other workers began to exercise control over entry and to exclude younger men.

The one other category of work is service. There were very few white males in domestic serve. Those that were clustered in their early 20's.

In general, it would seem that newer and more desirable occupations (metals and machines, construction, general crafts, white collar work) recruited at around the age of 17. Declining and deskilled trades drew younger workers and then dismissed or lost them. Jobs in these industries often became part of a youth labor market. Indeed, it looks at though the labor market for young people became stratified during early industrialization. In one sector were simple industrial jobs that required little skill and offered few prospects for advancement. In this sector as well

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were some non-industrial jobs such as running errands, carrying messages, doing various sorts of unskilled work, and so on. Young men often entered these jobs before the age of 17. They entered the newer, more skilled sectors after 17. Thus, the ages 17-20 appear critical ones, the age when young men found the kinds of work with which they would remain more or less identified throughout their working lives. Indeed, after the age 17-20 the relations between type of work and age became quite stable. One question (among many) which these suggestions pose concerns mobility within the working-class. Did young men who entered the boy labor sector usually move into the better sorts of work or were they stuck in marginal jobs throughout their adult lives?

One way to get a sense of the ethnic and racial distribution of work among young people is to concentrate, first, on two of the less ambiguous sorts of work, laborer and white collar. These stand for jobs which were among the least and most desirable. Table 3 shows their distribution between blacks and whites of different backgrounds.

The first great distinction is the low proportion of blacks of any age in white-collar work. Until 1900 the proportion was much lower than that of either native or foreign born whites. For example, at the ages 21-25 in 1880, the lowest proportion among whites was for Irish males living in Irish households (10%). Compare this to the index for Northern-born blacks (6%) and Southern born (2%). However, in 1900 the proportion of white

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collar workers among Northern born blacks had risen to almost 10%. This proportion now was higher than the one for German, Irish, or Italian born young men of the same age. However, the proportion of Southern born blacks in white collar work, 2%, remained the lowest for any group. Parenthetically, note here the difference between Northern and Southern born blacks. It is a fundamental distinction which will recur at almost every point throughout this analysis.

The native born sons of Germans were more often white collar workers than their foreign born ones. Among 17-20 year olds in 1880 the two proportions were, respectively, 19% and 6%; in 1900 they were 19% and 5%. The proportion of native and Irish born sons of Irish parents in white collar work also differed, though not quite as sharply. In 1900, finally, there were striking differences in the proportions of Italian and Russian born young men in white collar work: 4% of Italian 17-20 year olds and 13% of Russians, for instance.

The proportion of native born children of native parents in white collar work decreased a little bit between 1860 and 1880. Among natives of German parents, however, the proportion rose notably among 21-25 year olds between 1860 and 1880 and among 26-30 year olds between 1880 and 1900. Among the native born children of Irish parents there was no clear pattern between 1860 and 1880, but the proportion in white collar work rose in the next twenty years to a point near that for the other native born young men. The proportion of foreign born children of Irish and German

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parents in white collar work also increased a bit between 1880 and 1900.

As for laborers, among whites by far the highest proportion in 1860 and 1880 occurred among the Irish of Irish parents and in 1900 among Italians (47.6%). In fact, the proportion of laborers among the Irish born sons of Irish parents generally rose with age. Around a third of these young men were laborers in their late 20s. Note that in 1900 the proportion of laborers among Southern born blacks in their late 20s, 45%, was much higher than among the Irish though a bit lower than the Italian proportion. The proportion for Northern born blacks, 33%, was considerably lower, though still very substantial. Note also that the proportion of black laborers rose during the last two decades of the century even though the proportion in white collar work also increased. This reflects their movement out of domestic service (see Table 5). The blacks are the only group for whom a movement into laboring represented an improvement in occupational standing.

The proportion of laborers among natives of native parents was very low (the peak was 8% of 17-20 year olds in 1880), and only 4% of 26-30 year olds in any of the years. There also were few laborers among young men of German origins. Even more striking, only 4%-6% of sons of Russian immigrants were laborers in 1900. Fewer native born than foreign born children of Irish parents were laborers (for example, among 26-30 year olds in 1880, 11% and 32%, respectively). Thus, although the native born sons of the

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Irish infrequently reached white collar work, they did often manage to escape the bottom of the occupational hierarchy. In general, the proportion of white males working as laborers did not change very much in the last half of the nineteenth-century.

The bottom of the occupational hierarchy for men, surely, were the dead end jobs which I have called "boy labor". As already noted, it is hard to identify dead end jobs given the crudity of occupational categories, including those on the census itself. So what we see here, I think, is just a glimpse of a widespread phenomenon, not an accurate reflection. Therefore, what Table 4 shows is a rough indication of trends and of differences between groups.

Note that there was little difference in the proportion of white and black young men identified in dead end jobs. Especially among whites, the proportion of young men under age 17 in dead end jobs increased between 1850 and 1900. For example, among 15-16 year olds it rose from 0 to 2.4% to 5.5% to 5.7% to 7.3%. The highest proportion among whites was the 7.7% among 13-14 year olds in 1900 and among blacks the 9.3% for 15-16 year olds in the same year. Note that the white proportion falls off more steeply than the black proportion among 17-20 year olds in 1900, that is, from 7.3% to 1.88% compared to a drop from 9.3% to 6.4% among blacks. This is one indication of many of how blacks often were trapped at the bottom of the labor market. In general, what these figures point to is the emergence of a youth labor market with dead end

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jobs as an identifiable sector of the workforce. One can see it as quite age specific because these occupational designations almost disappeared among older men. For instance, among whites in 1880, only 1.3% of 26-30 year olds were identified with dead end jobs.

The analysis also shows the stratification of the labor market by race. (Table 5) The most striking feature of black male occupational distribution is the concentration in service jobs. Recall that there were almost no white men in these jobs. But through 1880 at most ages nearly half of employed black young men worked in some form of service. In 1860, over 7 out of 10 of those black men under 15 worked in service. Even in 1880, at ages 26-30, 36% still worked in service jobs. However, there was a huge decrease between 1880 and 1900. For instance, in those years the proportion of 15-16 year olds working in service dropped from 43% to 9% and of 21-25 year olds from 45% to 28%. These proportions were still far above those for whites, but the decline was startling.

As black young men moved out of service, they moved into jobs as laborers. Although the proportion of black young men working as laborers increased between 1860 and 1880, the largest jump occurred during the next twenty years. In that period the proportion of laborers among 15-16 year olds rose from 21% to 31% and among 21-25 year olds from 29% to 44%. There was a real increase, too, in the proportion of those 17-20 years old working in transportation, from 5% to 12% between 1860 and 1900 and from

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6% to 14% among 21-25 year olds. As noted before, very few blacks were in white collar work (around 5% of those in their 20's in 1900). But in 1900, 13% of employed black male 15-16 year olds had white collar jobs. This figure which includes all blacks masks the Northern/Southern born distinctions. Separate figures would show the Northern born proportion even higher. Perhaps this helps account for the school attendance patterns among blacks, which will be shown in the next working paper.

In general, however, blacks had a different labor market experience than whites. They concentrated in service. They were squeezed out of the more desirable, industrial sectors and, even, out of declining or deskilled crafts. They moved into unskilled work as laborers and into transportation, probably as carters, teamsters, and unskilled railway workers. These patterns will be critical to understanding the residential experience of black young men, which will be discussed later in this paper.

Young women, of course, had radically different occupational patterns then men. (Table 6) As I explicate some of these, recall that they take place in the context of the rising female labor force participation noted in the previous working paper. Table 6 shows figures only for white collar, textile and clothing, and service jobs because these accounted for the great bulk of female work. These figures, note, are based on the proportions in each age group, not just on the proportions employed.

The major theme is the distinctiveness of the black young

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women. In contrast to other groups, a high proportion of them were employed throughout their lives. White women dropped out of employment after their late 20's, when they married. Black women worked throughout their lives, and an extraordinary proportion were in service jobs. In fact, they started to work when they were quite young. Between 1860 and 1880, the proportion of 13-14 year olds working as domestics rose from 13% to 24%. This proportion, however, dropped between 1880 and 1900 to 2.6%, as black young women began to attend school longer. Indeed, in these twenty years the proportion employed at other ages dropped as well, among 15-16 year olds from 37% to 22% and among 26-30 year olds from 35% to 19%. There was a small decline in the proportion of older women at work between 1860 and 1880 but, still, 32% of 41-45 year olds and 37% of 51-55 year olds were working as domestics in 1880. Contrast this to 4% and 3% of white women of the same ages employed. Indeed, in 1900, 23% of 61-65 year old black women and 10% of those more than 65 years old were working as domestics.

In contrast to the experience of black males, black young women did not leave domestic service to enter other jobs. Much higher proportions of white than of black women worked in textile and clothing and in white collar work. In textiles, the white proportion declined after the age of 26. Its peak was about 9% among 17-20 year olds in 1880. However, in 1900 almost no black women in the sample worked in textiles. Here one sees the effect of the life course (marriage and the withdrawal of white women

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from the labor force); change in labor force composition (the entrance of young white men between 1880 and 1900, especially); and race. It looks as though there was a deliberate attempt to keep the textile labor force young, white, and cheap. Note, for instance, that the proportion of 51-55 year old white women working in textiles dropped from 4% to 1% between 1860 and both 1880 and 1900.

The proportion of white women in white collar jobs was small but definitely increasing. Among 21-25 year olds it rose from 3% to 5% to 9% between 1860, 1880, and 1900 and among 41-45 year olds from 1% to 3%. This increase probably reflects the feminization of teaching. There were very few black women in teaching. Overall, these figures point to the enormous difficulties black women had in moving into better sectors of the workforce, and they raise the question of why black women left service jobs in such substantial proportions late in the century. Was it because of a decline in demand or because the improved occupational position of black men made it less necessary for them to work as often and as long as before?

A separate examination of women in service illuminates some of these issues. (Table 7) Among younger women, service as an occupation peaked in 1870 for some reason, perhaps because 1860 was a depression year and some people could not afford servants. Mostly, blacks had the highest proportion of any groups in service, but the proportions among the Irish were also much higher

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than among either the native whites or the Germans. For example, among 15-16 year old young women in 1860, the proportions of servants were 10% among natives, 9% among Germans, 21% among the Irish, 31% among Northern born blacks and 41% among Southern born blacks. However, in 1870, the proportion of servants among Irish young women was actually higher than among the Northern born blacks in several instances. There were great differences, too, between foreign born and native born women. Among the Irish, for example, in 1900, 46% of the foreign born 17-20 year old daughters of Irish parents and 5% of the native born ones were servants. For women of German origin the same proportions were 22% and 5%. However, few young Italian or Russian born young women worked as servants. Among 17-20 year olds in 1900, the figures for Italians and Russians were, respectively, nil and 7%. Among 15-16 year olds they were 13% and 1%.

After the age of 25, there was a sharp drop in the proportion of Irish who were servants: for example, in 1880 33% of the 21-25 year olds, 20% of the 26-30 year olds, and 12% of the 31-35 year olds. Among Blacks the drop with age was not nearly as steep. For instance, between the same ages the proportion of servants among Northern born blacks dropped from 36% to 30% to 23% and among Southern born from 53% to 39% to 37%.

The proportion of German women who were servants was higher than the proportion among native whites. It peaked at 17-20 in 1880, 31% compared to 15% among the natives, also their highest

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point. The proportion of servants among native white young women plummeted between 1880 and 1900. For instance, among 17-20 year olds it went from 15% to 4% and among 21-25 year olds from 10% to 5%.

Two things must be stressed about black women in service. One is the high proportion still working in service among the elderly. The other, especially before 1900, is the sheer magnitude of service among black women: 64% of 17-20 year old black women were servants in 1870 and 65% in 1880. Table 8 makes this point in a slightly different way. It shows that most black women who worked were servants. In 1900, 89% of working 17-20 year old black women were in domestic servants. Overall, 73% of employed black women were domestic servants in that year. As might be expected the proportion among Northern born, 65%, though high was lower than among the Southern born, 75%. In these years most Southern born black women probably worked as domestic servants at some time. Partly, these figures reflect sex ratios (to be discussed later) because the superabundance of young women among the Irish and blacks meant that women had to work. Among blacks, probably higher male mortality and lower male wages also kept more older and married women at work. Finally, although these figures show how racism divided the labor market, they do point out that jobs for black women did exist. Indeed, perhaps black women found work more easily than black men. The presence of domestic jobs may have attracted more black women than men from the South to Philadelphia

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in the few decades after the Civil War and contributed to the skewed sex ratios, which, in turn, made it necessary for so many of them to keep working and made it so hard for many of them to marry.

Table 1

Employed white males by age and type of work:
1860, 1880 and 1900

Age		WC	Trans	M&M	E&C	Shoes	T&C	SS	Lab	Serv	Craft	Dead.	All
10-12													
	1860	0.00	0.00	0.00	7.14	7.14	0.00	0.00	7.14	0.00	42.86	35.71	100.00
	1880	15.79	5.26	5.26	0.00	0.00	21.05	5.26	21.05	0.00	21.05	5.26	100.00
	1900	9.09	0.00	0.00	0.00	0.00	4.55	4.55	9.09	0.00	18.18	50.00	100.00
13-14													
	1860	18.18	3.03	0.00	0.00	3.03	3.03	0.00	6.06	6.06	36.36	24.24	100.00
	1880	12.90	2.42	4.03	2.42	0.00	14.52	3.23	11.29	4.03	12.90	32.26	100.00
	1900	10.16	3.90	5.47	3.13	2.34	9.38	3.13	11.72	0.00	14.06	39.06	100.00
15-16													
	1860	31.06	4.35	2.48	4.97	2.48	6.21	4.35	11.80	1.86	21.74	8.70	100.00
	1880	29.69	3.93	3.49	2.18	0.87	14.41	2.62	9.61	0.44	17.47	15.28	100.00
	1900	27.48	2.67	7.25	2.67	1.15	9.16	1.53	9.16	1.53	18.70	17.93	100.00
17-20													
	1860	21.03	3.53	5.64	29.85	1.88	5.64	2.12	9.52	1.53	17.86	1.41	100.00
	1880	24.47	6.52	6.40	3.76	1.00	14.16	3.14	14.81	1.13	20.83	3.76	100.00
	1900	30.89	7.86	9.52	3.59	0.69	9.10	2.07	11.72	0.97	20.14	3.31	100.00
21-25													
	1860	26.32	7.55	8.52	12.41	5.18	11.54	4.64	17.91	2.27	2.91	0.76	100.00
	1880	26.67	8.62	4.96	6.42	0.81	8.37	3.90	14.39	2.36	21.71	1.79	100.00
	1900	30.07	9.54	9.54	5.93	0.40	8.10	2.97	11.23	1.60	19.32	1.20	100.00
26-30													
	1860	19.53	7.61	4.86	8.39	3.45	10.59	3.29	21.10	1.73	18.98	0.47	100.00
	1880	22.16	9.25	7.33	8.61	0.27	5.59	5.86	17.03	1.83	19.78	2.29	100.00
	1900	27.51	8.78	8.62	6.50	0.47	7.13	5.25	13.40	1.57	19.90	0.86	100.00

BEST COPY AVAILABLE

BEST COPY A

Table 2

Index of employed white male occupational clustering

Age		WC	Trans	M&M	I&C	Shoe	T&C	SS&UC Sp	Lab	Serv	Oth Craf	Dead.
10-12												
	1860	0.00	0.00	0.00	2.18	4.73	0.85	0.00	0.85	10.42	11.76	75.76
	1880	1.86	2.23	2.98	0.00	0.00	6.33	3.35	3.72	0.00	3.35	57.82
	1900	1.52	0.76	0.76	0.00	0.00	2.43	4.27	2.29	0.00	3.67	84.91
13-14												
	1860	8.96	5.42	0.00	0.00	8.13	18.33	0.00	3.13	42.92	23.13	173.54
	1880	16.50	10.87	24.35	10.66	0.00	46.48	21.73	21.33	85.31	21.93	341.05
	1900	12.24	15.93	23.09	12.47	161.89	41.80	21.71	33.72	0.00	25.87	572.29
15-16												
	1860	61.43	35.59	28.63	29.42	61.43	84.89	66.60	30.00	115.90	66.20	165.61
	1880	74.73	34.77	41.90	19.22	84.67	91.58	34.77	36.07	18.36	58.75	320.30
	1900	70.23	25.35	63.49	24.19	212.79	88.14	21.86	56.05	93.95	72.58	543.95
17-20												
	1860	115.64	73.61	159.98	99.14	74.09	132.25	80.33	61.04	193.28	122.46	150.00
	1880	98.81	92.74	122.89	53.23	156.12	144.38	66.87	89.05	75.92	112.34	126.47
	1900	109.38	98.60	114.70	42.71	151.74	119.21	42.48	98.26	77.89	107.86	140.39
21-25												
	1860	109.72	128.74	176.85	15.22	145.80	[illegible]73	116.43	89.51	177.34	120.77	72.87
	1880	128.24	145.82	113.35	107.44	150.50	101.46	99.00	103.07	188.64	139.37	71.53
	1900	126.65	142.31	137.96	84.19	105.21	126.32	72.89	112.28	158.51	122.63	61.48
26-30												
	1860	96.92	159.34	123.64	128.00	119.01	109.94	123.64	130.25	124.41	114.00	46.82
	1880	105.20	155.90	166.84	144.36	50.65	67.44	148.15	121.53	145.99	126.53	91.21
	1900	114.82	129.40	122.81	91.47	125.37	109.39	127.23	132.74	86.19	100.70	26.14

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Table 3

Male Laborers and White Collar Workers by Ethnicity 1860 and 1880

% White Collar

Age		NWA/ NWA	NWA/ GER	NWA/ IR	GER/ GER	IR/ IR	IT/ IT	RS/ RS	BL/ N	BL/ S
15-16										
	1860	7.30	9.00	10.10	9.40	8.30			0.70	0.00
	1880	13.40	13.40	7.50	12.00	11.50			0.40	0.00
	1900	12.35	5.15	13.11	0.00	0.00	6.38	6.82	0.00	5.80
17-20										
	1860	23.80	19.00	15.50	10.00	6.60			1.40	1.50
	1880	17.90	16.50	10.60	5.50	11.80			3.70	2.30
	1900	21.07	19.25	16.52	5.42	12.90	4.26	12.68	3.90	3.70
21-25										
	1860	26.80	22.90	8.50	10.00	6.60			4.10	4.10
	1860	21.10	24.40	16.40	14.50	10.10			5.80	1.80
	1900	25.15	19.05	19.72	9.93	6.17	7.29	12.20	NA	4.50
26-30										
	1860	23.60	12.50	13.60	10.70	11.70			1.60	2.20
	1880	21.90	20.00	8.70	13.40	10.10			7.20	3.30
	1900	22.09	24.25	16.59	9.08	7.30	8.64	14.11	9.50	2.00

% Laborer

Age		NWA/ NWA	NWA/ GER	NWA/ IR	GER/ GER	IR/ IR	IT/ IT	RS/ RS	BL/ N	BL/ S
15-16										
	1860	1.20	2.30	1.00	5.20	15.00			9.60	3.10
	1880	0.60	2.60	6.00	4.00	11.50			7.50	13.80
	1900	2.28	3.43	10.48	0.00	0.00	17.02	4.09	12.15	20.60
17-20										
	1860	2.40	10.70	8.10	5.00	10.60			13.90	14.10
	1880	7.90	3.90	9.50	13.70	24.70			18.90	18.10
	1900	5.86	3.50	6.73	8.13	25.01	23.40	4.23	23.10	28.10
21-25										
	1860	4.30	7.20	9.50	6.30	25.60			17.40	16.40
	1880	6.90	4.20	13.90	5.30	32.40			19.60	24.70
	1900	6.26	1.79	8.14	7.09	24.69	33.33	4.21	35.10	35.20
26-30										
	1860	4.00	0.00	4.50	9.00	33.30			21.90	17.20
	1880	4.01	7.00	11.40	7.40	31.80			23.20	26.60
	1900	4.10	2.84	9.21	8.29	28.47	47.68	6.05	33.30	45.00

Columns represent birthplace of subject (top line) and
birthplace of household head (second line)

BEST COPY AVAILABLE

Table 4

Males: Dead End Jobs 1850-16

		*Dead E	
		White	Black
10-12			
	1850	NA	NA
	1860	0.50	0.50
	1870	0.60	1.50
	1880	1.00	0.90
	1900	1.14	0.00
13-14			
	1850	NA	NA
	1860	1.50	2.10
	1870	4.50	3.80
	1880	6.10	4.30
	1900	7.67	2.80
15-16			
	1850	0.00	0.00
	1860	2.40	4.40
	1870	5.50	2.80
	1880	5.70	5.30
	1900	7.29	9.30
17-20			
	1850	0.00	0.00
	1860	1.10	1.20
	1670	2.90	3.60
	1880	2.30	3.40
	1900	1.89	6.40
21-25			
	1850	0.00	0.20
	1860	0.40	0.80
	1870	1.80	2.00
	1860	1.30	1.40
	1900	0.82	1.20

(Figures reprerersent % of entire age group in category.)

BEST COPY AVAILABLE

Table 5

Black male employment by age, 1860, 1880, and 1900

		WC	Trans	M&M	B&C	Shoes	T&C	SS	Labor	Serv	Craft	Dead.	All
Age													
10-12													
	1860	0.00	0.00	0.00	0.00	0.00	0.00	9.09	6.06	72.73	3.03	9.09	100.00
	1880	4.17	2.08	0.00	0.00	0.00	2.09	14.58	8.33	58.33	0.00	10.42	100.00
	1900	N=2											
13-14													
	1860	1.75	3.51	0.00	0.00	0.00	0.00	1.75	8.77	70.18	0.00	14.04	100.00
	1880	0.00	4.35	0.00	0.00	0.00	0.00	2.17	18.48	53.26	3.26	18.48	100.00
	1900	N=8											
15-16													
	1860	1.39	2.78	0.69	0.69	0.69	0.00	5.56	20.83	54.86	1.39	11.11	100.00
	1880	0.69	6.25	0.00	0.00	0.69	0.00	7.64	20.83	47.92	4.17	11.81	100.00
	1900	13.00	17.40	0.00	0.00	0.00	0.00	8.70	34.80	8.70	0.00	17.40	100.00
17-20													
	1860	2.23	4.90	0.67	1.78	1.11	0.89	6.68	22.27	53.67	3.79	2.00	100.00
	1880	4.26	10.79	0.15	0.30	0.00	0.61	4.41	24.92	45.74	4.26	4.56	100.00
	1900	4.90	12.20	0.00	0.00	0.00	0.00	9.80	36.60	25.60	2.40	8.50	100.00
21-25													
	1860	5.99	5.85	0.44	2.19	0.15	0.88	5.26	24.56	49.85	3.65	1.17	100.00
	1880	4.96	12.54	0.14	0.57	0.07	0.35	1.56	28.54	45.25	4.18	1.84	100.00
	1900	4.20	13.70	0.00	1.10	0.00	0.00	2.60	44.20	27.90	3.70	1.60	100.00
26-30													
	1860	4.87	9.00	0.15	1.03	0.29	1.18	5.60	24.19	48.67	3.39	1.62	100.00
	1880	6.35	14.89	0.20	0.40	0.07	0.60	4.50	31.30	35.80	4.37	1.52	100.00
	1900	4.10	10.80	0.00	1.00	1.00	0.00	2.60	53.60	19.10	6.20	2.10	100.50

BEST COPY AVAILABLE

Table 6

Female Labor Force by Age: Selected Occupations: 1860-1900

Age		White Collar		Textile		Service	
		White	Black	White	Black	White	Black
13-14							
	1860	0.34	0.21	1.85	0.21	3.70	13.62
	1870	0.36	0.24	2.39	0.00	5.02	27.14
	1880	0.56	0.20	2.53	0.20	4.63	24.44
	1900	1.40	0.00	6.32	0.00	4.56	2.60
15-16							
	1860	0.98	0.18	7.87	4.20	10.66	33.09
	1870	2.59	0.21	5.92	0.63	10.36	41.68
	1880	2.69	0.20	6.23	0.61	8.78	37.32
	1900	6.52	0.00	8.89	0.00	3.95	21.70
17-20							
	1860	3.11	0.45	9.99	7.08	10.66	45.97
	1870	3.64	1.32	7.64	1.63	17.01	51.32
	1880	5.37	1.27	9.00	1.38	13.35	54.32
	1900	9.36	1.80	7.82	0.00	7.82	37.70
21-25							
	1860	2.50	0.53	6.62	5.82	15.24	42.72
	1870	3.04	1.40	5.41	2.85	15.12	44.81
	1880	4.87	1.00	6.12	1.63	11.76	45.26
	1900	9.29	0.80	4.85	0.00	7.89	24.20
26-30							
	1860	1.37	0.34	4.91	4.67	15.24	40.69
	1870	2.56	0.71	4.15	2.12	11.32	39.82
	1880	3.90	0.45	3.25	1.18	14.00	34.86
	1900	4.60	1.30	3.29	0.30	5.95	19.00
31-35							
	1860	1.20	0.33	3.25	3.63	6.07	39.16
	1870	2.42	0.85	3.99	1.38	6.70	33.65
	1880	4.05	0.93	1.88	1.55	6.45	30.06
	1900	3.39	0.70	1.97	0.70	3.60	16.90
36-40							
	1860	2.03	0.44	4.88	2.94	5.70	46.90
	1870	1.19	0.61	1.85	2.23	6.40	33.81
	1880	2.85	0.61	2.00	0.95	5.23	32.56
	1900	3.24	3.10	1.78	0.00	3.26	20.70

BEST COPY AVAILABLE

Table 6 (cont.)

41-45							
	1860	1.17	1.22	3.07	2.60	5.40	42.53
	1870	1.57	0.52	2.65	1.91	5.80	34.94
	1880	2.55	0.63	1.84	0.88	4.49	31.95
	1900	3.46	0.90	1.80	0.90	2.93	19.60
46-50							
	1860	0.92	0.71	3.39	2.12	5.86	44.84
	1870	2.36	1.20	2.47	0.75	6.06	40.36
	1880	4.02	0.59	1.52	0.95	3.80	35.51
	1900	2.45	0.00	1.59	1.30	3.62	20.00
51-55							
	1860	1.33	0.36	4.00	2.17	3.67	49.56
	1670	2.43	0.29	1.99	0.57	3.54	31.23
	1880	3.07	0.22	0.97	0.22	3.23	36.74
	1900	0.33	1.50	1.36	1.50	3.78	32.30
56-60							
	1860	1.03	0.76	5.13	2.54	4.87	44.92
	1870	1.05	0.81	1.47	1.63	5.05	30.62
	1880	2.00	1.05	1.80	1.68	3.79	32.21
	1900	1.43	0.00	1.63	0.00	5.16	7.70
61-65							
	1860	1.99	0.69	2.99	2.08	5.47	36.11
	1870	0.37	1.01	3.32	0.51	3.32	31.31
	1880	1.77	1.24	0.88	0.83	5.01	22.31
	1900	0.76	3.90	0.73	3.90	3.64	23.10
66+							
	1860	0.68	0.91	2.03	1.52	2.37	28.66
	1870	0.81	0.23	0.81	0.70	2.24	20.19
	1880	1.57	0.70	0.59	0.53	2.54	20.00
	1900	2.07	0.00	1.21	0.00	1.03	10.00

BEST COPY AVAILABLE

Table 7

Females in Service by Age and Birthplace, 1860-1900

Age		Native	Irish	Irish/ NW	German	German/ NW	Ital.	Rus.	Black N.	Black S.
13-14										
	1860	5.58	6.52		1.54				13.33	16.00
	1870	5.68	36.89		5.88				20.45	46.67
	1880	3.21	6.25		25.00				18.44	38.62
	1900	2.06	0.00	4.05	14.49	0.00	0.00	1.75	10.00	0.00
15-16										
	1860	10.30	20.65		8.57				30.59	41.23
	1870	11.03	50.00		24.14				34.12	59.56
	1880	9.29	18.52		17.39				28.61	56.95
	1900	2.91	20.00	3.16	7.94	0.00	12.50	1.19	26.70	19.40
17-20										
	1860	8.13	35.25		24.32				44.10	51.98
	1870	15.41	50.00		30.17				43.53	64.35
	1880	15.34	34.85		30.77				44.28	65.54
	1900	3.98	46.11	5.09	21.92	4.71	0.00	6.52	31.70	38.80
21-25										
	1860	7.68	31.04		12.81				40.04	48.63
	1870	7.97	36.30		17.17				40.21	51.17
	1880	10.28	32.77		21.01				36.16	53.19
	1900	4.78	40.75	3.85	19.23	1.15	0.00	1.80	23.90	24.30
26-30										
	1860	6.00	20.34		2.21				38.82	43.46
	1870	5.67	24.85		7.10				36.42	43.60
	1880	6.43	19.73		4.55				30.05	38.97
	1900	2.99	20.77	4.84	8.22	2.38	1.15	2.16	19.50	18.90
31-35										
	1860	4.64	12.25		1.66				37.47	41.46
	1870	4.16	13.00		2.98				0.62	37.30
	1880	5.17	11.73		3.19				22.87	36.89
	1900	2.91	8.89	1.51	4.87	0.62	0.00	1.65	8.30	19.10
36-40										
	1860	3.07	12.63		0.90				46.05	48.35
	1870	4.64	11.75		3.27				35.36	32.38
	1880	4.37	8.96		1.49				28.29	36.47
	1900	2.21	9.01	2.66	1.10	0.74	0.00	0.00	14.30	21.50

BEST COPY AVAILABLE

Table 7 (cont.)

41-45										
	1860	3.47	12.99		1.66				37.93	47.50
	1870	2.70	10.00		5.23				31.47	37.62
	1880	4.74	7.04		1.65				26.72	36.76
	1900	2.20	10.64	3.17	0.00	1.78	2.94	0.00	16.00	22.10
46-50										
	1860	5.26	9.55		3.68				47.35	43.80
	1870	5.79	10.07		2.47				35.22	42.90
	1880	4.53	5.00		1.36				33.06	36.97
	1900	1.61	9.01	4.82	3.55	2.11	2.86	0.00	16.70	21.60
51-55										
	1860	3.82	7.59		0.00				39.07	56.36
	1870	2.62	6.90		1.85				35.12	27.62
	1880	3.98	6.52		0.46				30.81	40.00
	1900	1.87	11.30	6.67	1.34	0.00	0.00	0.00	9.10	38.20
56-60										
	1860	6.37	4.44		4.48				41.96	46.48
	1870	4.37	6.02		4.59				31.58	30.43
	1880	3.80	4.55		3.50				30.69	33.93
	1900	3.21	10.86	6.45	4.62	5.56	0.00	0.00	0.00	11.10
61-65										
	1860	5.62	9.52		1.96				33.33	39.53
	1870	4.07	2.67		1.79				32.14	30.28
	1880	3.57	6.60		4.21				17.31	26.28
	1900	4.37	3.57	7.69	4.64	0.00	0.00	0.00	37.50	17.70
66+										
	1860	2.68	1.37		2.17				26.27	30.57
	1870	1.79	3.33		1.28				19.02	21.15
	1880	2.91	1.92		2.83				13.29	21.31
	1900	0.86	2.45	0.00	0.00	0.00	0.00	0.00	0.00	15.00

BEST COPY AVAILABLE

Table 8

Proportion of Employed Black
Women in Service:1900

Age	%	
13-14	50.00	
15-16	100.00	
17-20	88.70	
21-25	70.90	
26-30	61.60	
31-35	67.60	
36-40	77.30	
41-45	72.40	
46-50	57.70	
51-55	75.90	
56-60	33.30	
61-65	66.70	
66+	75.00	
All	72.50	
All N. Born	65.10	(N=83)
All S. Born	74.60	(N=327)

BEST COPY AVAILABLE

Table 1

HOUSEHOLDS: SUMMARY STATISTICS BY FAMILY CYCLE STAGE, 1850-1900

(Percent)

Family Category		CYCLE	1+REL	1+BO	BO+REL	1+FAM	FEMHH
W1/NOCH							
1850							
	White	4.80	23.40	43.10	52.50	42.10	9.60
	Black	5.30	19.30	43.40	54.70	44.80	31.10
1860							
	White	3.20	24.50	30.00	46.10	30.30	12.80
	Black	4.10	24.30	35.30	52.00	35.80	39.30
1870							
	White	3.50	14.20	27.00	38.50	27.60	7.90
	Black	5.70	12.40	30.20	47.10	41.30	20.40
1880							
	White	2.90	14.30	27.50	35.90	28.80	10.90
	Black	6.40	14.30	30.80	41.50	32.12	22.40
1900							
	White	2.90	16.20	17.90	31.60		6.50
	Black	6.70	14.70	43.20	47.70		15.90
W1/CHO-4							
1850							
	White	6.70	12.00	36.70	44.60	36.70	1.00
	Black	4.30	13.20	33.90	44.20	35.60	10.90
1860							
	White	6.10	9.30	23.90	31.10	24.80	0.60
	Black	4.10	10.30	25.90	33.30	26.40	10.90
1870							
	White	5.00	10.60	24.10	31.70	24.10	0.70
	Black	3.90	20.60	29.00	47.10	31.00	4.50
1880							
	White	4.70	5.40	25.20	29.60	25.40	1.00
	Black	4.60	11.80	26.60	35.70	30.30	7.70
1900							
	White	2.70	13.80	21.90	31.40		1.20
	Black	4.80	16.10	45.10	54.80		9.70
W2/NOCH							
1850							
	White	4.70	29.30	40.40	56.10	40.70	13.10
	Black	10.60	20.60	37.90	52.20	38.40	30.40
1860							
	White	4.50	22.80	32.00	45.50	32.70	14.50
	Black	7.70	21.80	41.40	57.30	41.70	36.50
1870							
	White	4.50	23.00	28.90	43.00	29.80	15.60
	Black	11.10	19.20	34.50	47.00	36.30	29.50
1880							
	White	5.30	18.50	35.50	47.80	36.40	9.40
	Black	12.30	13.70	35.00	43.50	35.90	23.60
1900							
	White	5.90	20.80	22.00	37.70		11.70
	Black	[illegible]	[illegible]	[illegible]	45.70		21.00

BEST COPY AVAILABLE

W2/CHIL								
	1850							
		White	25.70	13.80	43.80	50.70	44.30	3.50
		Black	18.10	11.20	31.30	38.70	32.50	13.40
	1860							
		White	26.50	10.30	26.10	33.60	27.30	4.90
		Black	18.10	9.60	22.60	29.30	23.90	17.90
	1870							
		White	22.00	11.10	26.50	34.90	27.90	4.10
		Black	13.30	12.30	33.50	42.00	35.00	13.80
	1880							
		White	20.50	9.40	25.90	32.70	26.90	2.60
		Black	16.10	12.20	29.70	38.30	30.60	13.40
	1900							
		White	22.10	17.90	17.40	32.10		3.10
		Black	14.70	25.00	44.80	58.30		13.50
W3/NOCH								
	1850							
		White	3.00	23.90	43.50	53.70	44.40	23.20
		Black	9.30	11.80	49.10	55.80	50.10	42.90
	1860							
		White	3.30	27.00	43.10	57.20	44.00	31.10
		Black	7.00	15.40	40.10	58.00	51.50	51.20
	1870							
		White	3.60	20.70	40.20	51.10	42.60	24.80
		Black	8.00	11.10	44.10	51.70	47.30	39.10
	1880							
		White	4.20	13.70	43.10	49.80	43.90	19.20
		Black	9.10	9.20	41.90	47.30	44.50	35.90
	1900							
		White	4.80	21.20	23.80	40.40		23.40
		Black	10.90	16.90	45.10	59.10		28.20
W3/CHO-14								
	1850							
		White	10.80	12.40	43.80	50.00	44.20	7.40
		Black	7.80	12.40	32.10	40.60	32.70	22.20
	1860							
		White	10.30	8.50	31.20	37.00	32.00	6.90
		Black	7.90	7.20	27.00	31.80	27.60	24.30
	1870							
		White	11.60	8.00	25.90	32.10	27.60	11.00
		Black	6.70	5.70	35.80	38.90	37.00	20.40
	1880							
		White	9.90	8.70	32.60	37.80	33.20	6.60
		Black	6.90	9.80	35.80	42.90	36.20	20.80
	1900							
		White	8.90	16.00	20.00	33.40		5.60
		Black	6.60	23.30	37.20	51.10		16.30

BEST COPY AVAILABLE

W4/F15+								
	1850							
		White	4.30	8.20	49.00	55.60	49.60	38.10
		Black	3.30	7.50	38.80	43.30	40.30	53.00
	1860							
		White	3.80	9.70	28.60	36.20	31.80	34.50
		Black	5.00	9.90	36.00	43.10	41.20	54.50
	1870							
		White	4.60	10.70	31.40	40.20	35.20	30.70
		Black	4.10	9.90	35.80	42.60	40.70	62.40
	1880							
		White	6.00	6.20	35.20	40.30	38.70	26.70
		Black	3.40	13.90	33.60	43.90	41.30	55.60
	1900							
		White	6.60	23.60	21.70	42.10		42.00
		Black	5.50	27.80	30.60	50.00		58.30
W4/NOCH								
	1850							
		White	5.60	27.30	57.50	64.90	62.60	45.40
		Black	12.80	10.10	49.30	55.90	54.60	65.50
	1860							
		White	6.50	21.20	47.00	53.30	54.50	49.10
		Black	12.00	10.50	48.60	56.10	56.50	66.10
	1870							
		White	7.30	25.20	43.90	50.50	53.70	38.90
		Black	15.40	12.80	44.10	52.60	49.70	59.00
	1880							
		White	8.50	14.20	49.30	53.00	56.30	39.80
		Black	11.40	10.20	44.30	50.90	50.80	55.50
	1900							
		White	8.30	22.50	22.60	40.30		32.70
		Black	7.80	16.70	45.10	52.90		51.00
RESIDUAL								
	1850							
		White	13.00	33.80	57.60	64.00	60.60	2.70
		Black	13.70	14.50	46.20	55.40	49.80	6.90
	1860							
		White	12.60	26.00	41.20	44.50	46.90	2.80
		Black	14.40	16.10	36.10	46.80	41.60	8.60
	1870							
		White	12.00	26.40	42.70	48.20	46.30	4.00
		Black	15.90	16.20	40.90	50.70	47.50	7.50
	1880							
		White	12.00	26.00	38.10	49.30	40.50	1.80
		Black	17.10	14.30	36.30	44.60	40.00	9.10
	1900							
		White	7.10	18.20	16.60	31.60		10.60
		Black	7.50	14.30	31.60	36.70		18.40

BEST COPY AVAILABLE

W3/M15+								
	1850							
		White	7.30	11.50	37.20	44.80	36.80	12.10
		Black	4.80	5.70	27.80	32.00	28.30	32.00
	1860							
		White	7.60	7.70	25.80	32.60	27.70	11.90
		Black	7.00	8.50	22.20	29.00	21.80	28.70
	1870							
		White	7.90	10.10	23.50	30.70	24.90	13.50
		Black	4.60	7.60	30.60	36.10	31.10	31.70
	1880							
		White	7.50	6.10	28.90	33.50	30.10	13.80
		Black	4.10	9.30	34.00	41.00	35.80	33.60
	1900							
		White	8.90	15.50	17.60	29.60		12.50
		Black	6.60	16.30	21.90	37.20		25.60
W3/F15+								
	1850							
		White	3.90	11.10	30.90	47.20	30.20	12.90
		Black	3.80	7.90	28.30	34.90	28.90	25.00
	1860							
		White	3.80	6.50	27.10	31.20	28.90	16.30
		Black	4.80	6.50	24.50	28.50	26.50	39.50
	1870							
		White	4.90	5.60	28.70	32.80	29.00	16.50
		Black	3.50	10.80	25.20	32.40	27.30	25.90
	1880							
		White	3.60	4.80	24.90	29.70	25.60	10.00
		Black	2.80	8.70	28.40	35.00	31.10	24.00
	1900							
		White	4.30	18.10	16.10	31.60		15.10
		Black	5.50	11.10	33.30	36.10		27.80
W4/M15+								
	1850							
		White	10.30	17.20	39.60	44.70	41.40	30.80
		Black	6.10	7.30	34.30	39.20	36.30	42.90
	1860							
		White	11.70	8.90	28.00	34.70	31.30	26.80
		Black	7.90	9.10	29.90	35.90	32.60	41.10
	1870							
		White	13.20	6.40	29.90	34.80	32.50	29.20
		Black	7.90	11.90	40.40	48.40	42.30	50.00
	1880							
		White	14.90	8.20	31.20	36.90	33.60	21.20
		Black	5.70	10.40	30.50	39.30	34.20	49.70
	1900							
		White	17.50	15.60	17.50	30.10		30.80
		Black	7.20	29.80	38.30	55.30		44.70

BEST COPY AVAILABLE

Table 2
Families with Relatives or
Boarders,1850-1900

		%	
Year			
1850		White	Black
	0	48.70	52.80
	1	21.30	20.90
	2	12.20	11.10
	3+	17.90	15.20
	N	5468	4017
1860			
	0	62.70	58.30
	1	16.20	17.30
	2	8.00	9.30
	3+	11.20	15.10
	N	8129	4196
1870			
	0	62.80	53.50
	1	18.00	19.00
	2	9.00	11.50
	3+	10.00	16.10
	N	9843	3961
1880			
	0	61.40	57.50
	1	19.00	19.80
	2	8.70	10.00
	3+	10.90	13.10
	N	12600	6519
1900			
	0	66.40	48.10
	1	17.90	22.40
	2+	15.70	29.50
	N	7291	736

BEST COPY AVAILABLE

Table 2A Mean Number of Relatives and Boarders by Family Cycle Stage and Sex, 1900

	Whites		Blacks	
	Male HH	Female HH	Male HH	Female HH
W1 CH0-4	0.70	0.50	1.40	0.70
W1 NOCH	0.50	1.10	1.40	1.60
W2 CH	0.60	0.80	1.20	1.20
W2 NOCH	0.60	2.20	1.00	2.60
W3 CH1-14	0.60	0.90	1.20	2.00
W3 F15+	0.50	1.20	1.20	1.20
W3 M15+	0.50	1.20	0.50	1.10
W3 NOCH	0.80	2.00	1.50	1.90
W4 F15+	0.70	1.00	0.70	1.00
W4 M15+	0.80	0.70	1.10	1.30
W4 NOCH	0.60	1.40	1.20	1.40

BEST COPY AVAILABLE

Table 2B Probable Number of Boarders and Relatives by Selected Family Cycle Stages, 1850 and 1900 (derived from MCA)

	Whites		Blacks
	1850	1900	1850
W1 CH1-4	1.10	0.55	0.83
W2 CH	1.32	0.64	0.79
W3 CH1-14	1.26	0.67	0.90
All Families	1.30	0.69	0.90
RSQ	0.05	0.04	0.04

BEST COPY AVAILABLE

Table 3 FAMILIES WITH AT LEAST ONE RELATIVE
BY ETHNICITY, 1850-1900
(Percent)

Family Category	NATIVE NATIVE	ITAL.	RUSS.	GERMAN	IRISH	BLACK NORTH	BLACK SOUTH
W1/NOCH							
1850	23.30			11.30	29.10	22.40	16.20
1860	27.80			11.00	27.50	26.70	22.40
1870	13.00			13.30	19.60	11.90	13.60
1880	13.30			15.80	20.80	15.90	13.30
1900	15.10	9.50	12.10	11.10	28.60	7.10	16.70
W1/CHO-4							
1850	10.30			12.10	15.80	15.30	11.80
1860	7.30			11.60	11.90	11.70	6.70
1870	10.60			11.80	9.30	17.90	23.30
1880	4.80			5.30	10.00	10.40	13.30
1900	11.20	11.40	17.20	17.20	0.00	30.00	9.50
W2/NOCH							
1850	41.10			16.30	21.30	19.00	22.80
1860	27.70			14.90	22.20	25.90	17.80
1870	21.40			13.70	31.00	22.30	16.70
1880	18.20			18.20	19.80	15.00	13.10
1900	21.80	13.30	29.20	15.40	14.70	21.40	11.70
W2/CHIL							
1850	15.20			10.90	12.10	12.10	10.70
1860	10.60			10.00	10.20	10.90	8.90
1870	10.80			10.00	12.40	13.70	11.20
1880	11.30			4.60	7.40	11.40	13.10
1900	21.00	18.30	9.60	14.70	12.70	26.70	24.20
W3/NOCH							
1850	25.00			10.60	25.90	14.00	9.90
1860	32.80			9.30	26.00	12.70	10.00
1870	23.60			13.70	20.30	17.30	6.90
1880	11.80			12.20	10.10	8.30	9.70
1900	24.10	18.20	0.00	13.00	16.70	12.50	19.10
W3/CHO-14							
1850	12.20			10.10	13.80	10.80	12.90
1860	8.60			6.40	9.90	8.20	5.60
1870	7.80			5.10	10.00	7.30	4.60
1880	10.60			7.40	6.10	9.60	10.20
1900	21.10	8.30	5.80	7.40	7.60	9.10	28.10
W3/M15+							
1850	13.30			5.80	8.60	5.70	5.90
1860	7.20			8.80	8.40	6.80	9.90
1870	13.50			6.50	6.50	10.10	5.90
1880	7.20			2.30	6.30	10.30	8.20
1900	26.80	11.50	6.70	12.70	18.20	20.00	14.30

BEST COPY AVAILABLE

Table 3 cont.

W3/F15+							
1850	13.30			2.70	8.80	6.60	8.60
1860	7.70			8.60	3.00	7.30	6.30
1870	6.10			2.70	6.50	10.20	10.30
1880	3.60			7.80	4.40	5.50	10.90
1900	21.50	0.00	17.10	12.90	13.90	10.00	11.50
W4/M15+							
1850	8.00			2.40	6.80	4.30	7.00
1860	11.30			4.20	5.70	8.40	9.80
1870	7.20			4.10	6.20	8.70	14.00
1880	9.10			4.20	9.50	13.70	8.80
1900	20.30	12.80	10.00	11.00	11.70	42.90	24.20
W4/F15+							
1850	8.10			9.10	10.90	9.40	6.50
1860	10.10			3.50	11.60	8.40	11.60
1870	15.00			4.40	5.10	7.00	11.40
1880	7.40			6.30	3.60	15.80	12.50
1900	24.40	0.00	14.80	25.80	25.40	28.60	27.30
W4/NOCH							
1850	26.70			13.10	33.90	12.50	10.60
1860	23.20			10.50	23.20	10.10	11.20
1870	29.20			9.50	24.80	10.70	14.10
1880	14.80			5.40	19.70	11.50	9.50
1900	25.30	0.00	11.10	10.20	26.70	16.70	15.40
RESIDUAL							
1850	31.00			31.10	40.50	18.40	11.90
1860	25.80			28.70	25.00	17.60	15.00
1870	27.80			18.60	28.60	18.50	14.20
1880	28.70			15.30	27.10	15.10	13.80
1900	22.00	14.70	8.20	9.00	15.70	28.60	9.60

BEST COPY AVAILABLE

Table 4 FAMILIES WITH ONE OR MORE BORDERS
BY ETHNICITY, 1850-1900
(Percent)

Family Category	NATIVE NATIVE	ITAL.	RUSS.	GERMAN	IRISH	BLACK NORTH	BLACK SOUTH
W1/NOCH							
1850	46.00			37.50	39.40	41.40	45.20
1860	28.60			21.00	41.30	31.70	40.30
1870	30.20			16.20	22.90	33.90	43.70
1880	27.80			27.50	25.00	28.60	32.00
1900	16.70	19.00	15.10	22.20	14.30	14.30	56.70
W1/CHO-4							
1850	39.70			33.30	31.60	32.90	34.10
1860	24.30			23.10	23.80	19.80	35.00
1870	25.60			18.20	24.00	33.30	26.00
1880	23.80			31.60	20.00	27.20	29.70
1900	21.50	25.70	20.30	28.60	16.70	30.00	52.40
W2/NOCH							
1850	43.00			35.10	39.70	36.40	39.90
1860	41.30			20.00	20.00	38.00	45.90
1870	30.50			20.20	26.00	33.00	36.20
1880	34.90			31.20	39.80	33.40	36.80
1900	22.50	0.00	29.20	23.10	26.50	40.30	35.10
W2/CHIL							
1850	50.00			36.30	34.70	34.40	29.50
1860	30.50			22.80	23.10	24.30	28.70
1870	29.50			25.50	20.80	34.60	32.80
1880	25.60			26.10	26.70	27.60	30.70
1900	16.40	21.80	13.50	14.50	29.20	33.30	50.00
W3/NOCH							
1850	47.70			44.90	35.20	44.80	53.80
1860	49.30			32.70	36.00	52.20	45.30
1870	41.50			34.10	41.50	41.30	45.70
1880	45.10			41.80	39.40	45.80	30.60
1900	25.60	0.00	27.30	21.70	22.20	66.70	34.00
W3/CHO-14							
1850	52.60			33.70	33.60	36.90	29.50
1860	41.70			22.70	24.10	27.20	27.90
1870	30.90			21.40	23.40	32.70	30.20
1880	39.40			26.10	24.20	36.20	36.00
1900	19.70	16.70	19.00	13.80	20.30	27.30	40.60
W3/M15+							
1850	43.30			29.20	23.30	24.30	30.20
1860	28.90			26.30	17.60	25.80	19.10
1870	30.90			18.40	13.50	30.40	30.40
1880	35.30			23.40	19.90	43.60	27.20
1900	17.40	15.80	12.00	13.30	24.20	13.30	25.00

BEST COPY AVAILABLE

Table 4 cont.

W3/F15+								
	1850	46.70			30.70	23.50	29.50	27.50
	1860	31.90			17.20	21.20	19.50	26.10
	1870	36.40			20.70	19.40	33.90	17.80
	1880	27.70			23.50	19.10	30.10	27.30
	1900	13.70	38.50	20.00	29.00	16.70	20.00	38.50
W4/M15+								
	1850	43.80			37.50	29.50	29.80	38.50
	1860	31.00			20.40	24.80	30.20	30.20
	1870	37.00			18.00	23.10	44.90	36.80
	1880	40.50			22.00	21.80	32.90	29.20
	1900	18.90	17.00	16.70	16.70	18.90	28.60	42.40
W4/F15+								
	1850	56.30			38.20	28.10	35.80	40.30
	1860	37.70			17.50	15.90	34.90	38.00
	1870	36.30			30.80	20.60	42.10	32.40
	1880	40.00			25.90	32.10	29.50	36.70
	1900	24.20	37.50	14.80	8.10	23.80	13.30	40.90
W4/NOCH								
	1850	64.50			43.10	42.10	44.10	51.90
	1860	51.70			31.00	41.90	45.50	50.60
	1870	49.50			28.80	37.90	43.00	44.80
	1880	52.60			38.70	47.80	45.30	43.80
	1900	25.00	18.30	0.00	24.90	17.80	16.70	53.80
RESIDUAL								
	1850	61.60			55.60	50.60	48.80	44.50
	1860	40.70			39.20	43.10	34.60	38.10
	1870	45.00			41.00	39.30	44.00	39.20
	1880	35.50			40.80	35.90	37.10	37.30
	1900	15.20	15.10	20.00	18.80	17.60	28.60	31.40

BEST COPY AVAILABLE

Table 5 FAMILIES WITH AT LEAST ONE RELATIVE OR BOARDER BY ETHNICITY, 1850-1900
(Percent)

Family Category	NATIVE NATIVE	ITAL.	RUSS.	GERMAN	IRISH	BLACK NORTH	BLACK SOUTH
W1/NOCH							
1850	43.30			41.70	55.80	53.40	55.90
1860	48.60			31.50	52.50	55.40	47.80
1870	40.90			26.20	39.10	40.70	55.30
1880	35.60			36.80	37.50	40.70	41.80
1900	30.30	28.60	27.30	33.30	42.90	21.40	60.00
W1/CHO-4							
1850	47.30			41.90	40.00	43.50	44.70
1860	29.40			32.60	33.70	29.70	38.30
1870	32.50			28.20	32.00	50.00	45.20
1880	27.90			34.20	36.00	32.00	38.80
1900	30.80	34.30	34.40	37.10	16.70	50.00	57.10
W2/NOCH							
1850	65.70			42.50	50.10	49.60	55.30
1860	55.40			29.80	44.40	57.60	58.00
1870	44.40			33.70	44.80	46.10	48.40
1880	47.50			44.20	50.50	42.30	45.10
1900	38.20	13.30	45.80	34.60	41.20	50.00	44.20
W2/CHIL							
1850	57.40			42.80	40.50	42.90	36.50
1860	38.00			30.10	30.60	31.40	27.20
1870	37.20			32.40	31.80	44.20	40.40
1880	34.20			29.50	30.80	35.80	39.80
1900	34.00	37.30	21.30	26.20	36.60	46.70	63.40
W3/NOCH							
1850	59.60			51.10	44.80	51.00	59.90
1860	65.50			38.90	52.00	61.20	56.70
1870	54.20			43.80	50.70	53.40	50.30
1880	50.00			48.60	50.00	49.80	45.10
1900	44.80	18.20	27.30	34.80	36.10	79.10	48.90
W3/CHO-14							
1850	58.20			38.50	41.40	44.10	38.30
1860	46.90			27.30	31.60	33.30	30.70
1870	37.00			24.70	31.90	37.30	40.10
1880	46.30			30.40	26.90	44.10	42.80
1900	37.10	22.90	23.10	21.10	34.80	36.40	56.20
W3/M15+							
1850	41.10			34.20	31.00	28.60	34.40
1860	35.60			32.50	25.20	31.10	27.00
1870	40.60			23.40	17.60	38.00	34.30
1880	40.70			25.10	24.60	52.10	32.60
1900	30.80	21.00	18.70	26.00	37.90	33.30	39.30

BEST COPY AVAILABLE

Table [illegible] cont.

W3/F15+								
	1850	55.60			32.00	29.40	36.10	34.10
	1860	36.30			25.90	22.70	24.40	29.70
	1870	40.90			22.50	24.10	36.00	28.20
	1880	31.30			31.30	23.50	34.20	35.40
	1900	31.70	38.50	28.60	38.70	27.80	20.00	42.30
W4/M15+								
	1850	49.40			38.70	34.70	33.00	42.70
	1860	39.40			23.90	29.00	35.30	37.10
	1870	42.30			21.80	28.00	50.70	46.20
	1880	45.70			25.90	29.30	44.10	36.40
	1900	35.50	30.00	24.40	24.60	28.80	57.10	54.50
W4/F15+								
	1850	63.10			44.60	36.00	43.40	42.90
	1860	44.90			21.00	24.60	41.90	45.40
	1870	49.60			35.20	23.70	47.40	40.00
	1880	46.70			30.40	34.30	42.10	45.30
	1900	45.50	37.50	29.60	30.60	46.00	42.90	54.50
W4/NOCH								
	1850	68.90			54.10	57.60	52.60	57.50
	1860	60.00			39.50	44.60	53.90	58.00
	1870	60.50			31.60	39.40	50.00	54.20
	1880	57.80			41.20	51.60	53.20	49.90
	1900	44.60	18.50	11.10	33.70	40.00	33.30	59.00
RESIDUAL								
	1850	69.00			47.70	58.30	59.40	52.90
	1860	41.20			43.30	43.90	45.70	48.50
	1870	52.80			41.20	44.80	53.40	49.00
	1880	52.00			42.10	48.50	46.30	44.90
	1900	34.10	26.00	25.90	25.70	27.40	42.90	34.30

BEST COPY AVAILABLE

Table 6 FEMALE HEADED FAMILIES BY ETHNICITY,
1850-1900
(Percent)

Family Category	NATIVE NATIVE	ITAL.	RUSS.	GERMAN	IRISH	BLACK NORTH	BLACK SOUTH
W1/NOCH							
1850	10.00			5.00	10.60	31.00	32.30
1860	13.00			6.60	17.40	41.50	37.30
1870	9.20			3.30	6.30	19.50	20.40
1880	11.30			10.00	8.30	24.70	20.90
1900	8.30	9.50	0.00	0.00	0.00	14.30	16.70
W1/CHO-4							
1850	1.40			1.20	0.00	10.60	9.40
1860	0.00			0.70	2.00	11.70	8.30
1870	0.60			0.00	1.20	6.40	2.70
1880	1.40			0.00	0.00	11.20	5.50
1900	0.90	0.00	0.00	8.60	0.00	10.00	9.50
W2/NOCH							
1850	19.00			1.30	11.20	29.90	31.60
1860	17.30			5.00	16.80	36.10	37.60
1870	14.80			8.20	20.80	33.50	24.40
1880	9.90			2.60	11.20	30.40	18.70
1900	12.60	0.00	8.30	7.70	14.70	14.30	23.40
W2/CHIL							
1850	4.00			0.80	3.80	16.10	11.70
1860	5.70			3.00	5.20	19.00	16.30
1870	4.30			1.40	6.00	16.30	12.30
1880	2.90			2.50	1.30	15.80	12.00
1900	3.30	1.80	5.00	2.40	0.80	16.70	12.10
W3/NOCH							
1850	30.80			4.10	14.90	49.70	38.70
1860	37.30			3.60	31.20	52.00	51.30
1870	30.90			13.40	20.70	42.00	36.60
1880	21.60			8.90	19.20	41.50	31.20
1900	25.60	27.30	0.00	13.00	16.70	37.50	23.40
W3/CHO-14							
1850	9.40			0.70	6.90	34.20	15.50
1860	8.60			3.70	7.10	26.50	22.90
1870	10.40			5.40	15.30	26.40	15.10
1880	6.50			3.90	8.30	26.00	17.80
1900	6.00	4.20	0.00	7.40	6.50	9.10	18.80
W3/M15+							
1850	13.30			6.70	10.30	37.10	30.30
1860	11.30			7.90	15.10	36.40	23.00
1870	14.50			6.50	16.50	31.70	32.40
1880	17.40			6.90	11.00	41.00	28.60
1900	14.40	10.50	2.70	9.10	12.10	20.00	28.60

BEST COPY AVAILABLE

Table 6 cont.

W3/F15+								
1850	13.30			5.30	14.70	21.30	27.50
1860	18.70			3.50	16.70	41.50	39.60
1870	19.70			4.50	17.60	25.40	25.60
1880	9.60			7.80	13.20	31.50	19.10
1900	17.40	15.40	14.30	9.70	13.90	30.00	26.90
W4/M15+							
1850	35.50			10.10	25.60	48.90	39.20
1860	27.50			13.80	30.50	41.20	40.50
1870	31.50			16.20	31.60	60.10	41.50
1880	21.90			15.40	24.10	47.80	50.70
1900	31.00	6.40	20.00	28.80	38.30	42.90	45.50
W4/F15+							
1850	41.40			9.10	35.90	50.90	53.30
1860	36.00			19.30	37.70	60.50	51.20
1870	34.60			9.90	34.00	71.90	57.10
1880	29.60			17.70	27.10	65.30	48.40
1900	42.70	37.50	25.90	32.30	54.00	71.40	50.00
W4/NOCH							
1850	48.20			9.10	46.30	69.70	62.50
1860	55.20			27.70	43.00	67.40	64.70
1870	44.20			18.00	36.00	65.90	55.00
1880	45.10			19.90	39.60	61.70	51.60
1900	34.80	63.00	0.00	27.80	43.30	58.30	48.70
RESIDUAL							
1850	3.60			1.70	1.50	9.20	5.50
1860	1.90			2.00	4.50	9.00	8.40
1870	3.00			1.80	6.70	11.30	4.10
1880	2.20			1.40	1.30	12.10	7.20
1900	11.80	1.40	2.40	14.60	15.70	7.10	22.90

BEST COPY AVAILABLE

Table 7 FAMILIES WITH ONE OR MORE RELATIVES
BY OCCUPATION, 1850-1900
(Percent)

Family Category	WHITE							BLACK						
	P&P	BUSEMP	M&M	SK	SEMI	UNSK	WOM	P&P	BUSEMP	M&M	SK	SEMI	UNSK	WO
W1/NOCH														
1850	43.20	NA	33.30	20.70	7.70	20.30	NA	NA	NA	NA	17.70	17.50	17.80	25.80
1860	0.00	28.60	0.00	29.40	15.80	23.10	76.80	0.00	NA	NA	41.70	13.10	0.00	40.50
1870	8.50	13.00	3.70	11.40	13.50	14.40	100.00	NA	NA	NA	16.00	11.10	8.20	23.10
1880	16.90	0.00	16.70	7.40	12.80	11.40	100.00	40.00	NA	NA	16.70	13.70	10.10	17.60
1900	12.90	10.50	31.70	10.20	11.30	27.60	NA							
W1/CHO-4														
1850	21.80	33.10	11.30	11.60	6.50	6.30	NA	10.00	NA	NA	13.20	18.20	9.30	15.80
1860	14.70	9.70	21.80	7.60	10.80	7.80	NA	44.40	NA	NA	12.80	10.80	2.90	9.10
1870	15.50	25.50	10.60	9.60	16.20	4.00	NA	NA	NA	NA	30.00	22.40	13.20	NA
1880	2.00	13.40	8.60	5.90	4.30	2.60	0.00	NA	NA	NA	19.00	10.00	10.30	12.50
1900	15.00	18.90	4.00	14.00	11.00	16.60	NA							
W2/NOCH														
1850	34.70	NA	62.40	23.70	8.50	16.40	100.00	30.00	NA	NA	23.70	22.30	16.30	23.80
1860	19.00	0.00	32.80	27.20	5.60	15.90	100.00	0.00	NA	NA	35.60	16.70	10.00	28.90
1870	15.60	11.00	6.50	20.80	18.10	19.20	100.00	12.50	NA	25.00	20.00	18.10	15.40	27.50
1880	23.70	26.40	23.20	16.70	9.00	13.80	100.00	20.70	NA	NA	14.20	11.80	13.10	10.00
1900	20.70	33.00	23.10	15.20	19.40	12.30	33.30							
W2/CHIL														
1850	19.50	12.40	11.40	13.80	6.10	12.00	11.60	12.50	NA	NA	13.80	12.00	8.80	12.40
1860	14.30	21.90	6.70	8.80	11.30	8.60	10.10	16.70	NA	NA	12.10	7.30	11.70	9.70
1870	16.90	8.80	13.40	10.90	11.70	6.10	8.40	12.50	NA	36.40	11.10	10.90	13.10	8.60
1880	14.10	5.20	13.50	7.60	8.80	12.00	21.10	19.00	NA	8.30	10.10	12.90	12.40	7.20
1900	20.70	22.40	22.30	16.10	23.50	12.60	10.90							
W3/NOCH														
1850	27.50	NA	21.40	17.50	7.20	20.40	100.00	40.00	NA	NA	15.80	5.80	15.30	10.30
1860	17.40	16.30	36.70	23.20	3.10	22.60	100.00	NA	NA	NA	10.80	12.20	12.50	19.80
1870	13.50	15.70	10.70	19.80	13.60	19.90	100.00	10.00	NA	0.00	3.60	13.90	7.80	14.00
1880	14.80	13.70	0.00	8.80	9.10	8.90	100.00	9.40	NA	0.00	7.10	7.60	12.70	10.10
1900	11.30	35.90	36.10	19.00	15.00	27.70	36.40							
W3/CHO-14														
1850	14.10	15.40	24.20	9.20	15.80	13.00	16.20	20.00	NA	NA	7.30	10.00	14.10	11.40
1860	12.90	28.60	7.30	4.20	5.60	8.50	17.70	10.00	NA	NA	5.40	7.30	7.70	8.80
1870	10.60	16.50	4.30	4.90	9.10	8.90	7.90	0.00	NA	0.00	5.90	5.30	3.30	11.00
1880	8.20	17.00	10.60	4.50	9.30	7.70	4.70	20.00	NA	14.30	9.50	11.80	9.10	6.50
1900	17.80	17.20	23.90	14.80	16.50	5.40	0.00							
W3/M15+														
1850	14.10	33.80	1.40	14.00	5.50	12.10	2.90	10.00	NA	NA	0.00	15.80	1.90	3.30
1860	6.50	0.00	6.80	7.30	3.90	7.90	12.60	30.80	NA	NA	4.00	9.30	5.80	9.90
1870	17.10	17.50	10.60	10.70	12.00	3.30	2.50	0.00	NA	10.00	15.40	9.60	3.40	4.30
1880	8.40	9.60	2.90	2.90	5.90	7.10	8.10	0.00	NA	NA	3.00	11.90	8.70	11.30
1900	23.40	12.80	21.80	15.60	8.20	15.10	10.90							

BEST COPY AVAILABLE

Table 7 cont.

W3/F15+														
1850	13.10	NA	20.90	13.10	5.10	10.30	5.40	NA	NA	NA	7.10	12.20	3.40	7.90
1860	11.80	27.50	9.50	2.80	0.00	3.60	4.30	20.50	NA	NA	0.00	13.00	5.30	2.90
1870	15.80	0.00	3.60	7.10	2.50	3.70	0.00	NA	NA	NA	15.80	12.50	11.80	3.70
1880	1.80	0.00	2.70	5.30	6.40	0.00	11.70	8.30	NA	NA	27.30	13.10	6.10	2.50
1900	20.50	29.60	20.40	16.20	13.10	2.50	30.30							
W4/M15+														
1850	6.30	0.00	1.20	8.80	4.20	6.00	9.10	NA	NA	NA	8.30	7.50	5.90	7.80
1860	8.10	13.80	9.50	9.90	10.00	2.60	10.70	33.30	NA	NA	14.00	9.70	10.40	5.50
1870	9.00	5.90	3.30	6.50	4.70	8.10	5.10	10.75	NA	0.00	3.10	14.30	22.70	8.50
1880	11.40	0.00	6.00	6.90	6.20	13.20	9.80	0.00	NA	0.00	9.10	11.40	4.60	13.80
1900	15.70	22.00	24.80	11.80	11.60	14.20	26.40							
W4/F15+														
1850	14.70	NA	NA	13.60	8.80	0.00	5.60	NA	NA	NA	0.00	0.00	21.00	8.60
1860	14.40	19.40	30.60	10.10	3.90	4.30	9.20	33.30	NA	NA	10.30	9.30	10.70	8.70
1870	11.70	0.00	6.90	10.00	11.80	4.60	10.70	NA	NA	NA	23.50	10.00	5.90	8.30
1880	1.60	0.00	2.10	6.20	9.10	2.40	11.20	0.00	NA	0.00	13.30	4.50	26.90	17.50
1900	25.40	26.10	0.00	21.70	0.70	30.10	7.00							
W4/NOCH														
1850	9.50	23.20	NA	15.10	17.10	23.80	100.00	14.30	NA	NA	17.40	19.00	7.00	8.80
1860	25.90	0.00	0.00	16.90	26.30	4.30	100.00	10.00	NA	NA	11.90	13.50	11.30	8.90
1870	22.50	0.00	12.20	19.00	16.50	14.50	100.00	14.30	NA	25.00	15.40	16.00	17.90	9.50
1880	11.40	0.00	20.40	5.50	10.40	5.80	96.10	15.60	NA	16.70	6.80	7.50	5.80	13.70
1900	16.20	35.10	26.70	15.60	10.10	3.40	40.00							
RESIDUAL														
1850	30.50	23.90	27.80	29.00	44.70	33.40	4.30	3.30	NA	10.20	9.70	20.40	17.40	7.90
1860	23.50	46.50	25.90	26.50	17.90	11.30	23.30	25.00	10.20	NA	17.30	16.90	14.40	9.80
1870	25.20	27.30	20.70	24.10	32.30	28.00	16.50	3.00	NA	17.60	11.40	19.20	17.30	15.40
1880	31.70	49.40	16.90	22.40	24.50	27.00	14.70	9.90	12.50	9.50	12.70	14.50	16.20	12.50
1900	10.90	25.10	30.40	14.80	22.40	17.00	0.00							

BEST COPY AVAILABLE

Table 8 FAMILIES WITH ONE OR MORE [illegible] BY OCCUPATION, 1850-1900

Family Category		WHITE							BLACK						
		P&P	BUSEMP	M&M	SK	SEMI	UNSK	WOM	P&P	BUSEMP	M&M	SK	SEMI	UNSK	WO
W1/NOCH															
	1850	88.26	NA	61.40	34.90	24.70	34.50	61.90	NA	NA	NA	33.30	35.10	46.70	57.60
	1860	28.90	28.90	37.40	32.60	19.50	13.50	40.50	42.90	NA	NA	30.90	26.20	11.10	52.40
	1870	24.40	32.40	29.90	25.80	10.80	29.00	43.80	NA	NA	NA	20.00	38.30	37.70	41.00
	1880	29.70	0.00	44.20	20.10	40.50	11.40	46.80	30.60	NA	NA	93.10	24.20	27.00	45.60
	1900	12.10	21.50	15.90	13.40	13.60	45.70	NA							
W1/CH0-4															
	1850	73.00	73.20	64.80	25.50	41.30	24.00	NA	70.00	NA	NA	36.80	29.50	32.60	36.80
	1860	42.00	19.50	18.30	23.30	19.30	16.00	NA	33.30	NA	NA	43.60	21.50	20.00	27.30
	1870	25.80	43.40	6.90	26.00	12.40	31.20	NA	NA	NA	NA	25.00	28.40	32.10	60.00
	1880	35.70	33.40	37.30	24.10	27.20	8.80	0.00	NA	NA	NA	40.50	32.90	17.90	25.00
	1900	29.30	18.90	0.00	20.70	15.00	34.20	NA							
W2/NOCH															
	1850	51.30	NA	37.40	34.70	42.50	45.00	34.00	50.00	NA	NA	50.00	31.20	30.80	47.60
	1860	38.80	47.90	43.70	34.90	20.10	23.40	36.60	66.70	NA	NA	28.80	45.40	20.00	54.20
	1870	40.10	31.40	16.50	25.20	14.60	20.40	54.40	37.50	NA	25.00	30.00	36.10	31.70	34.70
	1880	34.20	37.40	36.20	36.60	28.00	31.40	36.20	41.40	NA	NA	38.30	31.90	31.10	40.60
	1900	41.60	11.50	15.40	21.10	20.10	14.90	33.30							
W2/CHIL															
	1850	64.40	56.50	63.20	38.00	43.90	23.60	46.30	37.50	NA	NA	39.40	30.70	27.30	34.00
	1860	30.50	39.60	52.30	24.00	26.70	17.90	21.00	29.20	NA	NA	32.20	21.50	14.30	22.60
	1870	35.10	24.80	35.80	25.80	24.00	19.10	33.40	42.90	NA	36.40	38.10	33.30	31.00	37.90
	1880	45.30	29.70	33.90	24.00	17.10	18.40	39.70	35.70	NA	29.20	26.00	31.10	24.00	38.70
	1900	21.20	16.10	14.90	13.90	16.40	29.80	56.60							
W3/NOCH															
	1850	35.90	NA	71.40	38.20	22.20	28.40	66.90	70.00	NA	NA	47.40	40.80	47.20	47.70
	1860	20.50	51.20	50.50	49.90	41.90	30.00	54.10	NA	NA	NA	51.30	43.90	27.10	58.60
	1870	51.50	0.00	41.50	31.00	36.80	44.00	51.30	20.00	NA	20.00	57.10	40.50	37.50	45.20
	1880	46.70	42.90	27.50	39.50	37.00	45.70	51.70	34.40	NA	30.00	47.60	44.60	28.40	45.30
	1900	18.50	9.00	48.20	24.00	21.50	6.40	81.80							
W3/CH0-14															
	1850	69.30	76.00	48.10	37.90	50.60	30.80	34.70	0.00	NA	NA	51.20	33.30	25.60	32.90
	1860	38.90	19.00	46.50	31.30	28.60	16.20	28.70	60.00	NA	NA	37.80	25.00	15.40	33.80
	1870	29.70	44.50	28.20	23.10	22.80	10.00	34.20	66.70	NA	22.20	35.30	39.40	30.00	39.10
	1880	33.50	44.40	36.90	28.90	22.70	29.10	45.60	15.00	NA	42.90	40.50	42.90	32.20	32.50
	1900	25.50	19.30	4.80	18.40	18.50	27.10	50.00							
W3/M15+															
	1850	58.10	69.60	64.50	39.20	13.50	20.60	30.10	20.00	NA	NA	31.80	28.90	23.10	30.00
	1860	29.10	12.10	27.50	21.70	28.10	17.90	31.20	15.40	NA	NA	32.00	16.50	23.10	23.90
	1870	25.80	32.10	18.40	22.50	20.80	9.90	37.90	45.40	NA	40.00	26.90	23.10	27.60	37.00
	1880	29.10	47.80	25.90	25.50	21.30	16.60	45.30	44.40	NA	NA	45.40	25.00	32.60	42.20
	1900	27.20	9.60	7.00	16.30	15.80	10.00	10.90							

BEST COPY AVAILABLE

Table 3 cont.

W3/F15+														
1850	73.80	NA	58.20	23.30	46.00	15.70	40.80	NA	NA	NA	42.90	24.50	37.90	23.70
1860	31.20	17.50	22.10	19.80	50.70	16.10	47.10	42.90	NA	NA	21.40	25.90	18.40	26.10
1870	42.00	16.60	38.80	26.20	27.10	13.90	29.00	NA	NA	NA	26.30	31.20	17.60	25.90
1880	24.90	50.60	36.10	26.10	20.90	18.20	11.70	33.30	NA	NA	18.20	29.50	22.40	30.00
1900	21.00	9.80	16.00	17.50	6.60	19.50	30.30							
W4/M15+														
1850	62.30	37.90	57.70	37.00	41.40	22.00	34.60	NA	NA	NA	41.70	37.50	27.40	33.00
1860	29.80	18.20	32.90	25.70	24.50	20.80	29.70	33.30	NA	NA	30.00	25.20	16.70	37.60
1870	36.10	42.10	39.80	25.20	30.00	21.70	32.20	50.00	NA	50.00	37.50	41.40	27.30	41.50
1880	30.10	37.20	25.80	24.90	23.80	17.70	41.10	31.20	NA	60.00	13.60	36.40	18.60	34.00
1900	18.30	16.40	9.10	17.40	11.30	19.90	26.40							
W4/F15+														
1850	58.00	NA	NA	43.40	19.30	34.80	57.20	NA	NA	NA	22.20	38.50	36.80	44.30
1860	22.70	80.60	9.70	29.20	20.10	0.00	43.10	22.20	NA	NA	37.90	23.30	21.40	45.60
1870	31.90	46.10	52.00	33.70	14.10	24.50	28.50	NA	NA	NA	35.30	40.00	41.20	34.50
1880	51.50	31.10	28.00	37.20	22.20	28.60	30.40	28.60	NA	71.40	23.30	29.50	30.80	35.90
1900	18.00	30.40	18.20	16.60	23.10	19.90	35.00							
W4/NOCH														
1850	73.90	76.80	NA	42.10	50.60	25.70	65.80	71.40	NA	NA	52.20	41.40	38.60	52.70
1860	32.80	NA	28.30	49.30	40.90	37.50	53.80	25.00	NA	NA	37.30	42.70	37.40	57.00
1870	43.00	65.90	29.00	39.90	38.30	20.00	61.00	47.60	NA	50.00	42.30	41.20	29.80	50.00
1880	44.10	67.80	48.00	43.90	36.70	46.60	57.40	43.70	NA	83.30	44.30	47.30	26.40	48.50
1900	30.20	16.00	20.00	22.00	18.90	20.30	35.00							
RESIDUAL														
1850	74.80	69.80	62.20	51.60	57.10	43.90	32.20	56.70	NA	36.40	52.80	46.00	44.10	36.80
1860	47.00	46.20	52.40	39.20	43.00	35.60	25.70	32.20	36.40	NA	38.30	36.80	35.20	26.80
1870	52.00	27.70	42.10	44.80	37.80	35.30	31.70	45.40	NA	41.20	44.30	38.90	42.90	30.80
1880	41.30	38.50	41.00	33.90	37.60	36.10	17.80	45.10	25.00	23.80	26.30	39.20	41.90	20.00
1900	21.40	3.10	23.90	12.50	15.10	24.20	0.00							

BEST COPY AVAILABLE

Table 9 FAMILIES WITH ONE OR MORE BOARDERS OR RELATIVES BY OCCUPATION, 1850-1900

Family Category		WHITE							BLACK						
		P&P	BUSEMP	M&M	SK	SEMI	UNSK	WOM	P&P	BUSEMP	M&M	SK	SEMI	UNSK	WO
W1/NOCH															
	1850	94.30	NA	61.40	40.70	33.30	45.40	NA	NA	NA	NA	36.70	47.40	55.60	74.20
	1860	28.90	57.10	37.40	51.00	36.30	36.50	76.80	42.90	NA	NA	61.10	39.30	11.10	78.60
	1870	32.90	45.40	29.90	36.10	24.40	43.40	100.00	NA	NA	NA	32.00	45.70	42.60	39.00
	1880	46.70	0.00	44.20	25.90	46.50	22.80	100.00	50.00	NA	NA	44.40	35.70	36.00	58.80
	1900	25.80	32.30	47.60	28.90	24.90	58.10	NA							
W1/CHO-4															
	1850	79.50	92.70	76.10	34.10	45.00	30.70	NA	40.00	NA	NA	47.40	43.20	39.53	52.60
	1860	52.50	29.20	40.20	28.80	30.10	19.40	NA	55.60	NA	NA	53.80	29.20	22.90	36.40
	1870	34.60	54.50	15.20	32.00	27.70	35.20	NA	NA	NA	NA	50.00	43.20	43.40	NA
	1880	35.70	40.10	45.90	29.60	30.20	11.40	0.00	NA	NA	NA	47.60	38.60	26.90	31.20
	1900	44.40	37.70	4.80	30.30	25.20	40.70	NA							
W2/NOCH															
	1850	64.60	NA	72.50	47.50	42.50	52.70	100.00	60.00	NA	NA	60.50	47.90	44.20	64.30
	1860	52.50	47.90	54.70	49.40	25.80	33.00	100.00	66.70	NA	NA	62.70	55.60	34.00	72.30
	1870	55.20	44.70	15.00	39.60	31.10	37.20	100.00	37.50	NA	37.50	50.00	49.00	38.50	56.10
	1880	49.00	56.30	51.00	45.50	35.80	41.10	100.00	55.20	NA	NA	46.70	39.30	40.40	50.00
	1900	54.50	37.90	30.80	32.30	39.60	26.20	66.70							
W2/CHIL															
	1850	71.60	64.50	63.20	46.10	46.90	31.60	50.90	50.00	NA	NA	43.60	40.10	34.50	40.20
	1860	40.20	46.90	58.00	30.20	35.80	25.40	31.20	41.70	NA	NA	39.60	26.50	22.10	31.20
	1870	47.60	28.40	46.00	33.20	34.70	25.20	38.70	57.10	NA	45.40	42.90	41.40	41.40	41.40
	1880	55.70	32.40	46.60	28.90	24.40	27.80	45.80	45.20	NA	37.50	34.40	40.20	32.60	44.10
	1900	38.20	34.50	34.80	27.00	35.80	37.50	75.50							
W3/NOCH															
	1850	55.00	NA	71.40	54.20	27.50	26.70	100.00	90.00	NA	NA	52.60	52.30	55.60	55.50
	1860	38.10	67.40	36.70	63.60	45.00	45.20	100.00	NA	NA	NA	54.00	53.70	33.30	73.30
	1870	62.60	15.70	45.90	45.40	44.40	55.20	100.00	30.00	NA	20.00	57.10	58.40	42.20	54.80
	1880	52.40	45.20	22.60	44.70	46.10	54.50	100.00	34.40	NA	30.00	54.80	48.90	37.20	50.00
	1900	29.80	40.30	22.30	36.50	36.50	34.20	100.00							
W3/CHO-14															
	1850	71.70	76.00	68.30	42.80	56.20	38.90	44.90	20.00	NA	NA	58.50	37.80	35.90	40.00
	1860	47.80	38.10	53.70	33.70	31.40	23.70	43.00	70.00	NA	NA	43.20	29.40	20.00	39.70
	1870	38.70	61.00	30.30	27.70	28.80	25.20	38.10	66.70	NA	22.10	38.20	42.50	31.70	43.50
	1880	38.90	53.40	47.60	31.80	28.30	31.50	47.50	35.00	NA	57.10	47.60	49.70	38.80	39.00
	1900	37.30	36.50	28.70	30.40	32.50	33.40	50.00							
W3/M15+															
	1850	66.80	69.60	66.10	47.60	16.20	32.70	32.90	30.00	NA	NA	31.80	39.50	25.00	33.30
	1860	35.60	12.10	33.20	27.30	32.00	24.20	43.80	46.10	NA	NA	34.00	22.70	28.80	32.40
	1870	39.10	40.80	29.10	31.40	27.30	11.60	39.50	45.40	NA	50.00	42.30	25.00	31.00	41.30
	1880	35.30	54.40	28.80	27.40	27.20	17.90	52.16	44.40	NA	NA	40.50	34.50	39.10	49.30
	1900	43.30	19.20	24.60	30.90	23.40	22.00	18.90							

BEST COPY AVAILABLE

Table [illegible]

W3/F15+															
	1850	80.30	NA	68.60	35.00	46.00	26.00	46.30	NA	NA	NA	50.00	32.60	41.40	31.60
	1860	36.50	45.00	31.60	21.70	50.70	16.10	51.40	42.90	NA	NA	21.40	37.00	21.00	27.50
	1870	54.50	16.60	42.40	29.90	29.70	17.50	29.00	NA	NA	NA	36.80	37.50	25.50	29.60
	1880	26.70	50.60	38.80	31.30	27.30	18.20	23.40	33.30	NA	NA	36.40	39.30	28.60	32.50
	1900	38.00	34.50	36.40	30.50	19.70	19.50	60.60							
W4/M15+															
	1850	66.60	37.90	57.70	42.50	41.40	26.40	42.00	NA	NA	NA	45.80	40.00	33.30	39.80
	1860	37.10	25.10	42.40	33.70	31.70	23.30	37.20	50.00	NA	NA	30.00	38.10	27.10	42.20
	1870	41.30	40.00	43.10	30.10	32.30	28.50	36.80	68.70	NA	50.00	40.60	51.40	43.20	46.10
	1880	40.20	37.20	29.60	29.20	28.30	29.00	45.70	31.20	NA	40.00	22.70	45.40	23.30	45.30
	1900	29.10	34.50	34.70	27.40	20.90	32.90	47.50							
W4/F15+															
	1850	72.70	NA	NA	54.10	28.20	34.80	61.10	NA	NA	NA	22.20	38.50	52.60	48.60
	1860	37.10	80.60	40.30	35.90	24.00	4.30	49.90	44.40	NA	NA	44.80	30.20	28.60	52.20
	1870	43.60	46.10	52.00	42.60	25.90	24.50	39.30	NA	NA	NA	58.80	43.30	47.10	40.50
	1880	51.50	31.10	28.00	42.30	29.20	31.00	41.60	28.60	NA	71.40	33.30	31.80	53.80	40.50
	1900	43.50	47.80	18.20	35.90	31.80	50.00	42.00							
W4/NOCH															
	1850	77.20	76.80	NA	51.30	50.60	49.50	100.00	85.70	NA	NA	56.50	56.90	45.60	56.70
	1860	45.30	NA	33.80	52.10	47.40	46.30	100.00	25.00	NA	NA	45.80	51.70	47.20	63.70
	1870	51.00	59.10	37.60	50.70	45.50	29.20	100.00	57.10	NA	75.00	51.90	51.90	42.90	55.80
	1880	48.80	68.20	57.40	47.60	44.20	46.60	98.10	56.20	NA	100.00	47.70	52.00	29.70	57.30
	1900	43.60	44.70	46.70	33.40	35.80	20.30	65.00							
RESIDUAL															
	1850	87.20	77.20	76.30	54.30	66.90	50.50	38.90	56.70	NA	45.40	55.60	59.90	57.80	42.10
	1860	49.70	46.50	60.50	41.70	41.20	38.90	40.20	50.00	54.50	NA	46.90	48.30	45.30	34.10
	1870	59.10	42.30	49.90	46.90	45.80	37.40	40.80	48.50	NA	52.90	51.90	50.20	53.00	41.00
	1880	55.50	68.80	47.80	44.00	46.00	45.40	34.50	45.10	25.00	33.30	37.30	47.20	49.50	30.00
	1900	36.40	28.20	45.60	26.10	36.00	32.70	NA							

BEST COPY AVAILABLE

1 Numbers by Birthplace and Age, 1850 and 1880

						Male			
			NWA/ NWA	NWA/ GER	GER/ GER	NWA/ IR	IR/ IR	BLACK NORTH	BLACK SOUTH
Age									
10		NA	NA		NA		NA	NA	NA
	1850		159.00	NA	29.00	NA	52.00	142.00	26.00
	1880		289.00	130.00	5.00	203.00	6.00	188.00	47.00
11		NA	NA		NA		NA	NA	NA
	1850		123.00	NA	27.00	NA	33.00	123.00	22.00
	1880		279.00	120.00	11.00	134.00	9.00	132.00	29.00
12			NA		NA		NA	NA	NA
	1850		141.00	NA	52.00	NA	51.00	118.00	38.00
	1880		377.00	110.00	7.00	202.00	3.00	100.00	44.00
13			NA		NA		NA	NA	NA
	1850		106.00	NA	33.00	NA	41.00	119.00	35.00
	1880		247.00	95.00	6.00	180.00	11.00	153.00	48.00
14			NA		NA		NA	NA	NA
	1850		134.00	NA	40.00	NA	55.00	134.00	31.00
	1880		323.00	127.00	8.00	158.00	8.00	142.00	51.00
15			NA		NA		NA	NA	NA
	1850		101.00	NA	38.00	NA	49.00	127.00	34.00
	1880		238.00	85.00	14.00	151.00	10.00	120.00	45.00
16			NA		NA		NA	NA	NA
	1850		135.00	NA	40.00	NA	51.00	95.00	36.00
	1880		250.00	104.00	13.00	161.00	28.00	107.00	49.00
17			NA		NA		NA	NA	NA
	1850		115.00	NA	58.00	NA	44.00	114.00	26.00
	1880		211.00	111.00	17.00	134.00	24.00	121.00	52.00
18			NA		NA		NA	NA	NA
	1850		125.00	NA	58.00	NA	61.00	111.00	46.00
	1880		262.00	114.00	19.00	160.00	30.00	133.00	64.00
19			NA		NA		NA	NA	NA
	1850		135.00	NA	65.00	NA	69.00	95.00	34.00
	1880		245.00	100.00	15.00	165.00	48.00	169.00	106.00

BEST COPY AVAILABLE

20		NA		NA		NA	NA	NA
	1850	140.00	NA	103.00	NA	84.00	114.00	46.00
	1880	288.00	104.00	28.00	146.00	38.00	138.00	88.00
21		NA		NA		NA	NA	NA
	1850	142.00	NA	112.00	NA	80.00	99.00	58.00
	1880	335.00	111.00	26.00	162.00	46.00	158.00	111.00
22		NA		NA		NA	NA	NA
	1850	117.00	NA	115.00	NA	100.00	103.00	56.00
	1880	333.00	100.00	30.00	147.00	56.00	198.00	176.00
23		NA		NA		NA	NA	NA
	1850	123.00	NA	96.00	NA	92.00	98.00	71.00
	1880	345.00	89.00	26.00	124.00	49.00	167.00	150.00
24		NA		NA		NA	NA	NA
	1850	123.00	NA	153.00	NA	92.00	85.00	64.00
	1880	344.00	93.00	42.00	132.00	54.00	193.00	199.00
25		NA		NA		NA	NA	NA
	1850	157.00	NA	200.00	NA	170.00	141.00	104.00
	1880	299.00	75.00	35.00	135.00	72.00	191.00	250.00
26		NA		NA		NA	NA	NA
	1850	111.00	NA	145.00	NA	84.00	85.00	75.00
	1880	271.00	65.00	38.00	98.00	74.00	175.00	169.00
27		NA		NA		NA	NA	NA
	1850	103.00	NA	118.00	NA	72.00	62.00	73.00
	1880	221.00	62.00	44.00	69.00	63.00	144.00	162.00
28		NA		NA		NA	NA	NA
	1850	132.00	NA	189.00	NA	116.00	109.00	97.00
	1880	341.00	62.00	74.00	122.00	119.00	175.00	209.00
29		NA		NA		NA	NA	NA
	1850	81.00	NA	134.00	NA	56.00	59.00	79.00
	1880	210.00	42.00	72.00	43.00	57.00	113.00	147.00
30		NA		NA		NA	NA	NA
	1850	177.00	NA	201.00	NA	248.00	154.00	180.00
	1880	303.00	38.00	91.00	82.00	229.00	228.00	336.00

BEST COPY AVAILABLE

Table 1, p. 3

			Female				
	NWA/ NWA	NWA/ GER	GER/ GER	NWA/ IR	IR/ IR	BLACK NORTH	BLACK SOUTH
Age							
10	NA		NA		NA	NA	NA
	146.00	NA	31.00	NA	38.00	168.00	26.00
	398.00	127.00	8.00	170.00	6.00	191.00	59.00
11	NA		NA		NA	NA	NA
	126.00	NA	28.00	NA	28.00	140.00	31.00
	358.00	135.00	7.00	165.00	2.00	162.00	41.00
12	NA		NA		NA	NA	NA
	168.00	NA	30.00	NA	44.00	169.00	42.00
	391.00	148.00	11.00	221.00	11.00	174.00	71.00
13	NA		NA		NA	NA	NA
	123.00	NA	29.00	NA	42.00	148.00	29.00
	333.00	118.00	11.00	138.00	8.00	178.00	67.00
14	NA		NA		NA	NA	NA
	150.00	NA	44.00	NA	46.00	139.00	46.00
	362.00	119.00	14.00	169.00	18.00	169.00	78.00
15	NA		NA		NA	NA	NA
	112.00	NA	25.00	NA	53.00	152.00	51.00
	259.00	106.00	10.00	156.00	23.00	155.00	60.00
16	NA		NA		NA	NA	NA
	152.00	NA	40.00	NA	66.00	161.00	40.00
	297.00	144.00	13.00	178.00	22.00	183.00	91.00
17	NA		NA		NA	NA	NA
	143.00	NA	41.00	NA	83.00	150.00	47.00
	261.00	134.00	18.00	129.00	41.00	174.00	105.00
18	NA		NA		NA	NA	NA
	179.00	NA	72.00	NA	139.00	192.00	75.00
	367.00	132.00	16.00	200.00	73.00	214.00	195.00
19	NA		NA		NA	NA	NA
	132.00	NA	62.00	NA	102.00	163.00	92.00
	386.00	126.00	24.00	196.00	42.00	219.00	227.00

BEST COPY AVAILABLE

Table 1, p.4

20	NA		NA		NA	NA	NA
	169.00	NA	80.00	NA	206.00	200.00	133.00
	406.00	148.00	39.00	196.00	90.00	293.00	300.00
21	NA		NA		NA	NA	NA
	108.00	NA	73.00	NA	94.00	134.00	85.00
	352.00	121.00	24.00	134.00	56.00	167.00	203.00
22	NA		NA		NA	NA	NA
	166.00	NA	91.00	NA	147.00	150.00	111.00
	387.00	152.00	38.00	226.00	95.00	247.00	279.00
23	NA		NA		NA	NA	NA
	136.00	NA	94.00	NA	119.00	148.00	125.00
	404.00	98.00	34.00	211.00	69.00	251.00	308.00
24							
	121.00	NA	103.00	NA	129.00	143.00	98.00
	407.00	106.00	28.00	172.00	69.00	269.00	287.00
25	NA		NA		NA	NA	NA
	170.00	NA	118.00	NA	184.00	224.00	226.00
	447.00	94.00	35.00	144.00	149.00	291.00	364.00
26	NA		NA		NA	NA	NA
	99.00	NA	98.00	NA	105.00	111.00	125.00
	335.00	74.00	29.00	121.00	95.00	189.00	220.00
27	NA		NA		NA	NA	NA
	84.00	NA	85.00	NA	79.00	109.00	88.00
	281.00	59.00	39.00	100.00	80.00	168.00	190.00
28	NA		NA		NA	NA	NA
	131.00	NA	101.00	NA	131.00	144.00	113.00
	417.00	55.00	51.00	95.00	173.00	208.00	215.00
29	NA		NA		NA	NA	NA
	67.00	NA	66.00	NA	43.00	88.00	89.00
	248.00	38.00	63.00	56.00	59.00	154.00	166.00
30	NA		NA		NA	NA	NA
	177.00	NA	130.00	NA	245.00	213.00	248.00
	344.00	58.00	79.00	83.00	283.00	296.00	379.00

BEST COPY AVAILABLE

Table 1A

Numbers by Birthplace and [illegible]

Age	Males NW/NW	IR/IR	IR/NW	G/G	G/NW	It/It	It/NW	R/R	R/NW	EN	BS
10	174	1	49	5	47	3	6	6	10	13	18
11	185	1	49	2	60	3	7	8	11	6	9
12	168	1	48	1	35	3	3	9	5	8	16
13	168	2	50	2	36	1	4	11	5	9	10
14	189	0	42	3	28	5	2	13	2	6	10
15	172	3	50	2	35	5	2	12	3	4	12
16	185	1	38	6	33	6	1	13	3	4	22
17	161	7	48	10	26	3	1	13	2	7	20
18	168	12	53	10	34	3	1	10	2	5	18
19	169	6	40	10	27	6	0	11	1	6	23
20	133	12	48	13	45	4	2	15	2	8	21
21	186	10	57	14	34	5	3	11	1	11	35
22	148	15	56	20	29	5	1	17	2	7	34
23	160	22	53	13	37	9	0	15	0	18	36
24	191	22	49	15	43	6	2	15	1	12	32
25	190	23	56	18	49	10	0	24	0	9	42
26	171	19	49	12	47	8	1	16	0	12	37
27	140	21	56	14	48	11	0	17	0	7	29
28	182	39	53	23	35	6	0	18	0	8	41
29	140	31	49	27	37	13	1	13	0	5	33
30	159	48	59	26	34	13	1	27	0	10	58

	Female NW/NW	IR/IR	IR/NW	G/G	G/NW	It/It	It/NW	R/R	R/NW	EN	BS
10	187	1	49	2	60	3	7	8	11	6	9
11	201	2	48	3	34	1	7	8	7	5	18
12	166	2	5	7	41	2	6	9	5	10	10
13	158	0	43	4	6	5	2	8	5	4	11
14	177	1	42	3	28	5	2	13	2	6	10
15	160	1	53	5	41	3	3	14	1	6	13
16	159	5	57	10	31	2	2	15	4	9	18
17	163	9	57	4	31	6	1	15	4	8	26
18	175	20	57	11	34	5	1	12	1	10	29
19	142	15	64	13	46	5	2	20	1	12	34
20	197	24	73	14	36	9	1	12	1	11	32
21	168	23	53	17	39	3	1	15	1	4	27
22	177	24	55	19	41	5	2	13	0	10	37
23	169	35	54	11	46	6	1	12	1	10	44
24	189	34	64	15	37	4	0	14	0	13	41
25	159	46	74	26	38	4	1	23	0	9	53
26	138	32	50	13	35	7	0	14	0	8	33
27	146	43	52	28	42	6	0	9	1	5	37
28	162	33	42	24	46	5	0	19	0	11	34
29	136	55	42	20	30	4	0	9	0	9	38
30	189	62	53	29	41	8	0	19	0	8	49

BEST COPY AVAILABLE

Table 15

Sex Ratios 1850 and 1880

Age		NWA/ NWA	NWA/ GER	GER/ GER	NWA/ IRISH	IRISH/ IRISH	BLACK N.	BLACK S.
10								
	1850	108.90	NA	93.55	NA	136.84	84.52	100.00
	1880	72.61	102.36	62.50	119.41	100.00	98.43	79.66
11								
	1850	97.62	NA	96.43	NA	117.86	87.86	70.97
	1880	77.93	88.89	157.14	81.21	450.00	81.48	70.73
12								
	1850	83.93	NA	173.33	NA	115.91	69.82	90.48
	1880	96.42	74.32	63.64	91.40	27.27	103.45	61.97
13								
	1850	86.18	NA	113.79	NA	97.62	80.41	120.69
	1880	74.17	80.51	54.55	130.43	137.50	85.96	71.64
14								
	1850	89.33	NA	90.91	NA	119.57	96.40	67.39
	1880	89.23	106.72	57.14	93.49	44.44	84.02	65.38
15								
	1850	90.18	NA	152.00	NA	92.45	83.55	66.67
	1880	91.89	80.19	140.00	96.79	43.48	77.42	75.00
16								
	1850	88.82	NA	100.00	NA	77.27	59.01	90.00
	1880	84.18	72.22	100.00	90.45	127.27	58.47	53.85
17								
	1850	80.42	NA	141.46	NA	53.01	76.00	55.32
	1880	80.84	82.84	94.44	103.88	58.54	69.54	49.52
18								
	1850	69.83	NA	80.56	NA	43.88	57.81	61.33
	1880	71.39	86.36	118.75	80.00	41.10	62.15	32.82
19								
	1850	102.27	NA	104.84	NA	67.65	58.28	36.96
	1880	63.47	79.37	62.50	84.18	114.29	77.17	46.70

BEST COPY AVAILABLE

Table 1B, p.2

20								
	1850	82.84	NA	128.75	NA	40.78	57.00	34.59
	1880	70.94	70.27	71.79	74.49	42.22	47.10	29.33
21								
	1850	131.48	NA	153.42	NA	85.11	73.88	58.82
	1880	95.17	91.74	108.33	120.90	82.14	94.61	54.68
22								
	1850	70.48	NA	126.37	NA	68.03	68.67	50.45
	1880	86.05	65.79	78.95	65.04	58.95	80.16	63.08
23								
	1850	90.44	NA	102.13	NA	77.31	66.22	56.80
	1880	85.40	90.82	76.47	58.77	71.01	66.53	48.70
24								
	1850	101.65	NA	148.54	NA	71.32	59.44	65.31
	1880	84.52	87.74	150.00	76.74	78.26	71.75	69.34
25								
	1850	92.35	NA	169.49	NA	92.39	62.95	46.02
	1880	66.89	79.79	100.00	93.75	48.32	65.64	68.68
26								
	1850	112.12	NA	147.96	NA	80.00	76.58	60.00
	1880	80.90	87.84	131.03	80.99	77.89	92.59	76.82
27								
	1850	122.62	NA	138.82	NA	91.14	56.88	82.95
	1880	78.65	105.08	112.82	69.00	78.75	85.71	85.26
28								
	1850	100.76	NA	187.13	NA	88.55	75.69	85.84
	1880	81.77	112.73	145.10	128.42	68.79	84.13	97.21
29								
	1850	120.90	NA	203.03	NA	130.23	67.05	88.76
	1880	84.68	110.53	114.29	76.79	96.61	73.38	88.55
30								
	1850	100.00	NA	154.62	NA	101.22	72.30	72.58
	1880	88.08	65.52	115.19	98.80	80.92	77.03	88.65

BEST COPY AVAILABLE

Table 1C

Sex Ratios:1900

Age	NW/NW	IR/IR	IR/NW	G/G	G/NW	It/It	It/NW	R/R	R/NW	EN	ES
10	93.05	100.00	100.00	300.00	78.33	100.00	85.71	75.00	90.91	216.67	200.00
11	92.04	50.00	102.08	66.67	176.47	300.00	100.00	100.00	157.14	120.00	50.00
12	101.20	50.00	950.00	14.29	85.37	150.00	50.00	100.00	100.00	80.00	160.00
13	106.33	0.00	116.28	50.00	600.00	20.00	200.00	137.50	100.00	225.00	90.91
14	106.78	0.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
15	107.50	300.00	94.34	40.00	85.37	166.67	66.67	85.71	300.00	66.67	92.31
16	116.35	20.00	66.67	60.00	106.45	300.00	50.00	86.67	75.00	44.44	122.22
17	98.77	77.78	84.21	250.00	83.87	50.00	100.00	86.67	50.00	87.50	76.92
18	96.00	60.00	92.98	90.91	100.00	60.00	100.00	83.33	200.00	50.00	62.07
19	119.01	40.00	62.50	76.92	58.70	120.00	0.00	55.00	100.00	50.00	67.65
20	67.51	50.00	65.75	92.86	125.00	44.44	200.00	125.00	200.00	72.73	65.63
21	110.71	43.48	107.55	82.35	87.18	166.67	300.00	73.33	100.00	275.00	129.63
22	63.62	62.50	101.82	105.26	70.73	100.00	50.00	130.77	0.00	70.00	91.89
23	94.67	62.86	98.15	118.18	80.43	150.00	0.00	125.00	0.00	180.00	81.82
24	101.06	64.71	76.56	100.00	116.22	150.00	0.00	107.14	0.00	92.31	78.05
25	119.50	50.00	75.68	69.23	128.95	250.00	0.00	104.35	0.00	100.00	79.25
26	123.91	59.38	98.00	92.31	134.29	114.29	0.00	114.29	0.00	150.00	112.12
27	95.89	48.84	107.69	50.00	114.29	183.33	0.00	188.89	0.00	140.00	78.38
28	112.35	118.18	126.19	95.83	76.09	120.00	0.00	94.74	0.00	72.73	120.59
29	102.94	56.36	116.67	135.00	123.33	[illegible]	0.00	144.44	0.00	55.56	86.84
30	84.13	77.42	111.32	89.66	82.93	162.50	0.00	142.11	0.00	125.00	118.37

BEST COPY AVAILABLE

Table 2

Marital Status and Ethnicity, 1850 and 1880 0-1880

% Married

Age		Male							Female						
		NWA/ NWA	NWA/ GER	GER/ GER	NWA/ IR	IR/ IR	BLACK NORTH	BLACK SOUTH	NWA/ NWA	NWA/ GER	GER/ GER	NWA/ IR	IR/ IR	BLACK NORTH	BLACK SOUTH
18															
	1850	0.00	NA	0.00	NA	3.30	0.00	0.00	5.60	NA	8.33	NA	4.30	6.30	4.00
	1880	0.00	0.00	5.30	0.00	0.00	0.00	1.56	4.30	3.00	6.10	4.10	6.50	11.20	8.70
19															
	1850	3.70	NA	3.10	NA	1.50	1.10	0.00	22.70	NA	35.50	NA	7.80	12.30	5.40
	1880	0.00	0.00	0.00	0.00	0.00	3.60	4.72	11.10	9.20	12.70	7.20	19.40	23.30	19.80
20															
	1850	2.90	NA	6.80	NA	9.50	3.50	2.20	24.90	NA	31.30	NA	19.90	16.50	19.60
	1880	4.10	0.00	7.30	0.00	4.00	8.70	6.82	19.00	15.90	26.10	11.50	11.30	32.40	23.60
21															
	1850	7.80	NA	7.10	NA	20.00	5.10	4.00	38.00	NA	48.00	NA	20.20	21.60	24.70
	1880	6.00	10.70	7.60	3.40	6.60	12.00	15.32	29.40	21.90	33.90	19.20	14.00	34.10	33.50
22															
	1850	18.00	NA	16.50	NA	15.00	20.40	23.20	41.60	NA	62.60	NA	33.30	30.00	25.20
	1880	14.60	14.20	20.00	10.00	10.80	22.20	22.70	40.50	40.50	43.00	27.60	14.20	42.90	37.00
23															
	1850	29.30	NA	33.30	NA	31.50	27.60	33.80	51.50	NA	68.10	NA	37.80	31.10	36.80
	1880	27.50	14.80	57.70	27.80	18.50	37.10	34.70	40.40	49.50	43.70	42.00	29.40	48.60	49.70
24															
	1850	34.20	NA	23.50	NA	38.40	40.00	43.80	43.80	NA	66.00	NA	39.50	48.30	36.70
	1880	33.80	31.40	36.10	22.30	24.90	44.00	42.20	48.00	53.30	55.20	44.90	45.30	57.40	54.10
25															
	1850	35.70	NA	33.50	NA	40.00	49.70	43.30	51.20	NA	68.60	NA	41.90	37.10	39.80
	1880	36.60	48.10	51.50	43.20	25.00	44.50	52.40	50.80	47.70	55.30	45.00	44.10	60.80	50.20
26															
	1850	53.20	NA	41.40	NA	54.80	58.80	50.70	56.60	NA	75.50	NA	54.30	49.60	46.40
	1880	46.80	56.70	60.50	43.30	46.00	59.50	55.00	57.80	67.70	79.30	47.90	55.70	73.00	60.20
27															
	1850	55.30	NA	53.40	NA	54.20	54.80	63.00	59.50	NA	76.50	NA	46.80	53.20	46.60
	1880	48.90	62.20	72.70	27.80	30.80	54.20	56.80	67.50	77.30	81.90	69.20	47.90	67.30	65.30
28															
	1850	62.10	NA	52.90	NA	60.30	51.40	65.00	70.20	NA	82.20	NA	63.40	50.70	54.00
	1880	60.20	56.70	66.50	61.00	50.40	58.80	61.40	54.40	48.67	82.30	44.40	58.30	66.80	69.80
29															
	1850	56.80	NA	63.40	NA	71.40	59.30	61.00	73.10	NA	81.80	NA	81.40	63.60	49.40
	1880	66.60	80.30	77.50	42.30	69.00	64.70	65.30	70.60	74.00	87.40	73.20	64.40	74.10	72.30
30															
	1850	65.00	NA	66.20	NA	66.10	57.30	55.00	54.20	NA	81.50	NA	63.70	41.90	41.90
	1880	62.60	78.30	80.10	52.80	61.00	62.70	67.90	70.00	71.40	91.10	60.30	56.80	70.30	63.10

BEST COPY AVAILABLE

Table 2A

Percent Ever Married by Sex and Birthplace Group:1900
(Percentages calculated only when N=5 or more)

Age		NW/NW	IR/IR	IR/NW	G/G	G/NW	It/It	It/NW	R/R	R/NW	BN	BS
18	m	0.00	10.00	0.00	0.00	0.00	NA	NA	3.60	NA	0.00	5.60
	f	7.50	0.00	6.20	0.00	20.70	73.30	NA	6.30	NA	10.00	20.70
19	m	1.40	0.00	2.90	0.00	0.00	0.00	NA	3.20	NA	16.70	0.00
	f	15.60	7.50	7.30	31.00	17.50	78.60	NA	33.50	NA	25.00	11.80
20	m	4.40	10.00	4.50	6.90	2.30	NA	NA	15.90	NA	12.50	4.80
	f	21.30	4.80	9.70	43.10	16.50	60.80	NA	47.10	NA	18.20	18.80
21	m	5.10	0.00	10.10	0.00	10.30	38.50	NA	25.00	NA	18.20	8.60
	f	29.70	15.60	30.40	40.00	20.70	NA	NA	59.50	NA	NA	40.70
22	m	21.30	15.40	11.10	22.70	12.00	23.10	NA	34.70	NA	33.30	20.60
	f	36.20	14.30	25.50	38.30	25.70	100.00	NA	62.20	NA	30.00	51.40
23	m	28.30	15.80	11.10	18.20	19.40	34.60	NA	42.90	NA	38.90	22.20
	f	44.40	33.30	17.70	57.00	33.80	88.90	NA	73.50	NA	70.00	61.30
24	m	26.20	21.10	16.70	24.80	24.30	68.80	NA	51.90	NA	41.70	25.80
	f	49.80	34.10	36.70	69.00	43.80	NA	NA	84.30	NA	46.20	66.10
25	m	38.20	20.00	29.80	25.60	66.70	NA	NA	62.00	NA	44.40	45.20
	f	52.40	38.20	48.40	77.90	56.70	NA	NA	92.40	NA	75.00	62.50
26	m	41.80	25.00	29.30	59.40	47.20	72.70	NA	68.10	NA	25.00	56.80
	f	63.90	63.40	42.20	72.50	62.70	90.00	NA	97.60	NA	75.00	62.50
27	m	58.20	44.50	31.90	66.70	56.10	62.60	NA	67.80	NA	57.10	51.70
	f	63.20	56.10	50.50	79.10	55.60	94.10	NA	92.30	NA	80.00	62.20
28	m	53.80	42.40	28.30	67.90	46.70	52.90	NA	81.10	NA	25.00	68.30
	f	68.20	75.00	55.90	90.30	64.70	93.30	NA	96.30	NA	72.80	64.70
29	m	60.40	55.60	40.50	73.00	48.40	71.10	NA	83.80	NA	20.00	45.40
	f	69.40	63.80	60.00	76.90	61.50	NA	NA	92.00	NA	77.70	73.70
30	m	61.90	68.30	35.30	85.40	57.40	54.60	NA	79.20	NA	60.00	52.60
	f	67.20	58.60	56.60	91.90	82.20	100.00	NA	96.30	NA	75.00	74.50

BEST COPY AVAILABLE

Table 3

Household Heads and Spouses, 1850 and 1880

Age		Male						
		NWA/ NWA	NWA/ GER	GER/ GER	NWA/ IR	IR/ IR	BLACK NORTH	BLACK SOUTH
18	1850	2.40	NA	0.00	NA	1.64	0.00	0.00
	1880	1.30	0.00	0.00	0.00	0.00	0.75	1.56
19	1850	3.70	NA	0.00	NA	1.45	2.11	2.94
	1880	0.00	0.00	0.00	0.00	0.00	1.78	5.66
20	1850	3.57	NA	11.65	NA	9.52	4.39	6.52
	1880	3.40	0.00	3.62	0.00	4.00	6.52	5.68
21	1850	5.63	NA	8.93	NA	17.50	5.05	10.00
	1880	3.00	8.90	7.60	4.10	6.58	7.59	10.81
22	1850	15.38	NA	13.91	NA	19.00	21.36	23.21
	1880	12.90	13.20	20.00	6.73	16.13	19.19	17.05
23	1850	26.02	NA	31.25	NA	33.70	23.47	32.39
	1880	16.30	11.10	34.62	23.97	24.69	26.35	24.67
24	1850	28.46	NA	26.80	NA	42.39	32.94	37.50
	1880	23.00	28.50	25.94	20.06	24.86	25.39	35.18
25	1850	30.57	NA	36.50	NA	39.41	47.52	39.42
	1880	24.30	39.70	34.29	34.15	25.00	35.08	35.20
26	1850	48.65	NA	42.07	NA	57.14	52.94	52.00
	1880	43.90	61.30	55.26	40.49	48.65	44.57	39.05
27	1850	52.43	NA	55.08	NA	56.94	53.23	57.53
	1880	34.70	53.36	61.36	19.10	33.12	48.61	46.91
28	1850	56.82	NA	52.38	NA	65.52	42.20	62.89
	1880	48.30	31.88	60.73	54.14	52.90	40.00	47.85
29	1850	53.09	NA	64.18	NA	71.43	54.24	60.76
	1880	48.60	62.86	69.16	46.48	69.03	53.10	55.10
30	1850	60.45	NA	65.67	NA	62.90	52.60	57.78
	1880	50.10	69.11	75.14	40.24	61.00	46.05	58.33

BEST COPY AVAILABLE

Table 3, p.2

Age	Female NWA/ NWA	NWA/ GER	GER/ GER	NWA/ IR	IR/ IR	BLACK NORTH	BLACK SOUTH
18	4.47	NA	6.94	NA	3.60	7.29	4.00
	2.10	1.52	6.13	2.40	6.53	8.88	2.57
19	20.45	NA	25.81	NA	6.86	9.82	5.43
	3.60	4.19	8.47	4.14	3.60	15.53	12.33
20	17.16	NA	31.25	NA	17.00	15.50	19.55
	11.60	15.38	21.01	7.35	10.01	18.43	16.66
21	31.49	NA	42.47	NA	18.10	19.40	21.18
	19.76	17.83	25.43	16.99	14.03	22.76	21.18
22	34.34	NA	58.24	NA	30.61	32.00	30.63
	25.77	31.10	35.09	18.86	11.05	25.91	25.09
23	38.98	NA	60.64	NA	33.13	37.84	36.00
	27.69	32.24	37.90	38.28	19.14	32.66	37.66
24	39.67	NA	59.22	NA	36.21	42.66	39.79
	39.53	38.63	50.91	38.59	36.61	37.55	37.98
25	43.53	NA	62.71	NA	37.08	37.95	39.38
	40.50	35.96	55.30	30.62	43.41	45.70	38.46
26	56.57	NA	70.41	NA	49.52	17.28	46.40
	42.53	43.62	68.97	39.95	54.11	56.61	44.09
27	59.52	NA	72.94	NA	46.83	49.54	55.69
	46.29	73.94	70.73	64.74	46.01	46.43	49.47
28	64.89	NA	76.24	NA	61.07	50.00	55.64
	43.55	31.23	70.59	29.50	55.02	48.08	51.17
29	79.10	NA	83.33	NA	83.78	61.36	53.94
	58.60	61.04	72.16	61.90	64.47	55.84	53.02
30	51.97	NA	78.36	NA	65.31	48.36	55.46
	51.51	64.54	91.13	42.93	53.04	52.02	49.27

BEST COPY AVAILABLE

Table 3A

Proportion of household heads and spouses:1900

Males

Age	NW/NW	IR/IR	IR/NW	G/G	G/NW	IT/IT	R/R	BN	BS
18	0.00	10.00	0.00	66.00	0.00	NA	0.00	0.00	0.00
19	0.70	0.00	0.00	0.00	0.00	0.00	6.50	0.00	0.00
20	1.80	20.00	4.90	8.90	2.60	NA	9.10	12.50	4.80
21	2.50	0.00	4.10	0.00	6.90	30.80	21.90	27.30	11.40
22	16.50	707.00	4.20	17.10	12.00	15.40	28.60	28.60	11.80
23	27.80	15.80	6.50	18.20	15.60	30.80	28.60	38.90	16.60
24	18.90	21.10	11.90	7.50	18.90	62.50	42.90	41.70	31.30
25	26.90	20.00	22.90	19.20	23.80	57.10	56.30	33.30	28.60
26	30.60	18.80	23.80	59.40	39.70	59.10	59.60	25.00	48.70
27	46.60	36.90	25.00	66.70	43.90	56.00	61.70	28.60	37.90
28	41.40	44.10	32.60	52.30	36.70	47.10	86.80	37.50	46.30
29	49.50	55.60	38.10	73.00	40.60	63.20	86.50	20.00	33.30
30	48.80	70.70	39.20	76.60	47.30	54.60	75.30	50.00	39.70

Females

Age	NW/NW	IR/IR	IR/NW	G/G	G/NW	IT/IT	R/R	BN	BS
18	3.50	0.00	2.00	0.00	13.80	53.30	3.00	10.00	13.80
19	9.00	7.50	3.60	22.40	10.00	71.40	28.40	16.70	14.70
20	12.40	4.80	3.20	43.10	6.40	56.80	29.40	27.30	9.40
21	20.70	15.00	19.60	33.30	17.70	NA	50.00	NA	25.90
22	25.20	9.50	19.20	38.30	22.90	75.00	56.80	20.00	43.20
23	29.80	23.30	17.30	46.20	26.20	88.90	70.60	60.00	43.20
24	35.00	27.30	25.90	51.20	31.30	NA	74.40	38.50	41.50
25	36.70	35.60	39.10	77.90	47.40	NA	80.40	33.30	32.10
26	52.90	58.60	30.70	72.50	56.10	85.00	97.60	62.50	48.50
27	50.80	54.10	40.50	74.90	44.40	94.10	80.80	80.00	54.10
28	48.10	71.40	44.90	90.30	53.80	93.30	87.00	45.50	50.00
29	52.90	61.70	47.20	76.90	53.90	NA	92.00	11.10	63.20
30	57.00	58.70	45.70	79.70	77.70	95.70	88.30	37.50	59.20

BEST COPY AVAILABLE

Table 4

Index of Marriage to Household Headship, 1850 and 1880

Index

		Male					Female				
		NWA/ NWA	GER	IR	BLACK NORTH	BLACK SOUTH	NWA/ NWA	GER	IR	BLACK NORTH	BLACK SOUTH
18											
	1850	0.00	0.00	201.22	0.00	0.00	125.28	120.03	119.44	86.42	100.00
	1880	0.00	0.00	0.00	0.00	100.00	161.13	100.00	100.00	126.13	338.52
19											
	1850	100.00	0.00	100.00	52.13	0.00	111.00	137.54	113.70	125.25	100.00
	1880	0.00	0.00	0.00	202.25	83.10	242.72	150.00	299.76	150.03	160.58
20											
	1850	81.23	58.37	100.00	79.73	33.74	145.10	100.00	117.06	106.45	100.00
	1880	80.39	200.00	100.00	133.44	120.07	158.51	100.60	114.33	175.00	141.66
21											
	1850	120.93	79.51	114.29	100.99	40.00	120.67	113.02	111.60	119.34	116.62
	1880	113.18	99.64	100.00	158.10	141.72	136.29	133.31	100.00	255.81	156.75
22											
	1850	117.04	118.62	78.95	95.51	100.00	121.14	107.49	108.79	93.75	82.27
	1880	112.50	100.00	66.59	115.69	133.14	133.31	118.06	128.69	165.57	147.47
23											
	1850	112.61	106.56	93.47	117.60	104.35	132.12	112.30	93.87	82.19	102.22
	1880	142.51	177.92	74.99	140.78	140.66	134.68	115.40	218.72	148.81	131.97
24											
	1850	120.17	87.69	90.59	121.43	116.80	110.41	111.45	109.09	113.22	92.23
	1880	120.37	116.71	100.00	173.30	119.95	115.41	117.20	125.03	152.86	142.44
25											
	1850	116.78	0.92	101.50	104.59	109.84	117.62	109.39	113.00	97.76	101.07
	1880	122.43	149.90	102.08	126.85	148.86	125.63	100.00	104.29	133.04	130.53
26											
	1850	109.35	98.45	94.50	111.07	97.50	100.00	107.23	109.65	287.04	100.00
	1880	96.98	109.48	96.19	133.50	140.85	139.96	114.29	103.15	128.95	136.54
27											
	1850	105.47	96.95	96.24	102.95	109.51	100.00	104.88	94.51	107.39	83.68
	1880	123.23	118.40	92.76	111.50	121.08	128.92	107.98	95.27	144.95	132.00
28											
	1850	109.29	100.99	92.03	121.80	103.36	111.62	107.82	103.82	101.40	95.34
	1880	118.23	104.40	95.26	147.00	128.32	114.52	118.15	105.25	138.94	136.41
29											
	1850	106.99	0.99	100.00	109.33	100.00	92.41	98.16	97.16	103.65	91.58
	1880	121.55	112.04	94.56	121.85	118.51	116.09	111.97	99.41	132.70	136.36
30											
	1850	107.53	100.81	105.09	109.89	95.19	104.29	104.01	97.53	74.21	74.21
	1880	116.84	105.89	100.00	136.16	116.41	129.35	100.00	107.63	128.59	128.59

BEST COPY AVAILABLE

Table 4A Proportion of Household Heads and Spouses:1900

	Males									Females								
Age	NW/NW	IR/IR	IR/NW	G/G	G/NW	IT/IT	R/R	BN	BS	NW/NW	IR/IR	IR/NW	G/G	G/NW	IT/IT	R/R	BN	B
18	0.00	10.00	0.00	0.00	0.00	NA	0.00	0.00	0.00	3.50	0.00	2.03	0.00	13.80	53.30	3.00	10.00	13.8
19	0.70	0.00	0.00	0.00	0.00	0.00	6.50	0.00	0.00	9.00	7.50	3.60	22.40	10.00	71.40	28.40	16.70	14.7
20	1.80	20.00	4.90	8.90	2.60	NA	9.10	12.50	4.80	12.40	4.80	3.22	43.10	6.40	56.80	29.40	27.30	9.4
21	2.50	0.00	4.10	0.00	6.90	30.80	21.90	27.30	11.40	20.70	15.00	19.60	33.30	17.70	NA	50.00	NA	25.9
22	16.50	7.70	4.20	17.10	12.00	15.40	28.60	28.60	11.80	25.20	9.50	19.20	38.30	22.90	75.00	56.80	20.00	43.2
23	27.80	15.80	6.50	18.20	15.60	30.80	28.60	38.90	16.80	29.80	23.30	17.30	46.20	26.20	88.90	70.60	60.00	43.2
24	18.90	21.10	11.90	7.50	18.90	62.50	42.90	41.70	31.30	35.00	27.30	25.90	51.20	31.30	NA	74.40	38.50	41.5
25	26.90	20.00	22.90	19.20	23.80	57.10	56.30	33.30	28.60	36.70	35.60	39.10	77.90	47.40	NA	80.40	33.30	32.1
26	30.60	18.80	23.80	59.40	39.70	59.10	59.60	25.00	48.70	52.90	58.60	30.70	72.50	56.10	85.00	97.60	62.50	48.5
27	46.60	38.90	25.00	66.70	43.90	56.00	61.70	28.60	37.90	50.80	54.10	40.50	74.90	44.40	94.10	80.80	60.00	54.1
28	41.40	44.10	32.60	52.30	36.70	47.10	86.80	37.50	46.30	48.10	71.40	44.90	90.30	53.80	93.30	87.00	45.50	50.0
29	49.50	55.60	38.10	73.00	40.60	63.20	86.50	20.00	33.30	52.90	61.70	47.20	76.90	53.90	NA	92.00	11.10	63.2
30	48.80	70.70	39.20	76.60	47.30	54.60	75.30	50.00	39.70	57.00	58.70	45.70	79.70	77.70	95.70	88.30	37.50	59.2

BEST COPY AVAILABLE

Table 42 Proportion of Married Young People Living With Parents, 1850-1900

Age	18-20		21-24		25-27		28-30	
	White	Black	White	Black	White	Black	White	Black
Year								
Female								
1850	0.00	1.00	0.00	0.60	0.20	0.80	0.00	0.20
1860	0.00	0.00	0.50	1.00	0.00	0.30	0.30	0.20
1870	0.00	0.00	0.20	0.80	0.10	0.30	0.20	0.30
1880	2.10	7.10	0.60	4.70	1.00	3.30	0.40	2.80
1900	19.40	9.10	11.30	6.40	6.90	5.30	6.30	3.30
Male								
1850	0.00	16.70	2.70	1.30	1.70	1.10	0.90	0.80
1860	16.70	8.30	3.50	4.50	1.00	1.80	1.30	1.40
1870	0.00	10.00	2.10	3.00	2.40	1.20	1.50	2.00
1880	5.00	13.30	7.90	7.10	6.60	3.90	3.40	2.90
1900	13.60	40.00	11.50	7.30	8.90	1.50	4.30	1.30

BEST COPY AVAILABLE

Table 5

Employment and Ethnicity, 1860 and 1880

% Employed

Age		Male							Female						
		NWA/ NWA	NWA/ GER	GER/ GER	NWA/ IR	IR/ IR	BLACK NORTH	BLACK SOUTH	NWA/ NWA	NWA/ GER	GER/ GER	NWA/ IR	IR/ IR	BLACK NORTH	BLACK SOUTH
10	1860	0.00	NA	4.76	NA	6.67	3.85	3.85	1.80	NA	0.00	NA	0.00	4.93	3.70
	1880	2.50	2.90	0.00	0.00	0.00	3.19	8.51	2.22	0.00	0.00	1.10	0.00	7.33	13.56
11	1860	1.03	NA	0.00	NA	13.33	7.43	0.00	0.00	NA	3.23	NA	0.00	3.66	12.50
	1880	5.40	6.20	0.00	7.10	0.00	6.06	10.34	8.83	4.60	0.00	11.50	0.00	8.64	14.63
12	1860	0.75	NA	10.00	NA	4.76	7.35	14.29	4.83	NA	5.26	NA	5.26	7.11	20.59
	1880	22.90	15.70	33.30	15.40	0.00	15.56	16.18	17.70	18.00	0.00	19.90	66.70	14.37	22.54
13	1860	0.00	NA	17.24	NA	5.26	9.88	0.00	4.04	NA	3.45	NA	10.00	15.06	3.23
	1880	31.90	36.80	33.30	34.80	25.00	21.57	22.92	16.70	29.20	44.40	24.10	33.30	22.47	31.34
14	1860	7.02	NA	92.00	NA	12.50	18.75	45.45	7.89	NA	5.56	NA	15.38	17.86	27.27
	1880	50.60	70.90	100.00	39.90	40.00	32.39	41.18	26.00	39.30	75.60	32.10	57.10	21.89	50.00
15	1860	15.57	NA	65.71	NA	54.17	44.44	17.14	9.57	NA	30.30	NA	53.85	30.37	42.11
	1880	54.20	66.20	81.80	58.20	45.00	45.83	55.56	34.90	59.80	37.50	43.80	77.60	31.61	63.33
16	1860	33.87	NA	54.76	NA	67.65	55.10	68.97	26.62	NA	24.32	NA	50.94	48.29	55.26
	1880	81.00	76.10	92.30	70.50	66.00	53.27	71.43	55.60	61.90	75.00	56.90	84.00	41.53	65.93
17	1860	57.84	NA	72.97	NA	80.00	72.90	66.67	21.24	NA	55.56	NA	53.06	54.27	65.22
	1880	86.70	76.40	93.90	85.40	89.60	82.64	76.85	49.50	65.50	76.90	61.60	59.70	57.47	74.29
18	1860	71.05	NA	70.37	NA	83.67	79.45	77.78	30.77	NA	44.44	NA	59.38	68.12	64.00
	1880	77.50	81.10	88.90	79.60	85.00	86.47	87.50	53.20	62.50	93.00	62.50	80.60	65.89	78.97
19	1860	79.44	NA	86.05	NA	82.22	84.83	87.80	32.74	NA	36.36	NA	64.94	60.95	65.75
	1880	79.60	91.90	86.20	90.00	90.70	85.21	90.57	54.60	60.50	71.10	71.30	61.00	68.49	74.89
20	1860	83.72	NA	76.60	NA	87.23	91.40	90.00	22.67	NA	29.41	NA	60.00	72.88	70.00
	1880	88.90	88.80	92.50	88.50	92.00	89.13	96.59	57.30	49.70	78.40	69.60	86.10	58.70	80.33
21	1860	91.49	NA	95.38	NA	93.65	90.85	93.28	19.35	NA	35.85	NA	59.15	62.99	62.86
	1880	86.30	90.90	88.60	97.20	93.20	87.97	94.59	58.40	57.50	61.90	67.80	91.40	62.28	71.43
22	1860	93.94	NA	90.36	NA	96.10	92.44	90.00	25.42	NA	26.76	NA	55.81	60.70	65.52
	1880	88.50	93.00	96.70	90.50	97.20	88.85	94.32	43.90	52.90	57.80	70.40	80.00	66.40	72.04
23	1860	93.22	NA	96.20	NA	95.31	94.85	92.86	21.82	NA	24.29	NA	39.81	54.61	62.82
	1880	91.20	91.10	100.00	90.00	87.70	91.62	95.67	49.10	49.00	47.30	46.90	77.60	58.17	64.61
24	1860	97.87	NA	96.05	NA	89.06	93.35	98.04	13.74	NA	17.50	NA	39.62	59.31	71.05
	1880	88.10	96.70	97.60	92.60	89.00	95.34	93.47	51.50	38.90	41.00	49.60	58.10	55.76	63.07
25	1860	88.52	NA	95.83	NA	93.69	90.06	92.54	26.87	NA	22.35	NA	44.31	60.71	66.13
	1880	89.60	87.20	97.10	97.50	100.00	91.62	96.80	54.70	52.70	47.40	53.00	63.20	52.92	67.58

BEST COPY AVAILABLE

Table 5A

Proportion of young people employed:1900

Males

Age	NW/NW	IR/IR	IR/NW	G/G	G/NW	IT/IT	R/R	EN	BS
10	0.70	NA	6.00	0.00	4.90	NA	11.80	7.70	0.00
11	0.60	NA	0.00	NA	2.30	NA	0.00	16.70	8.30
12	8.30	NA	7.30	NA	3.50	NA	20.00	0.00	0.00
13	21.80	NA	31.20	NA	25.80	NA	23.30	11.10	10.00
14	41.30	NA	38.20	NA	53.10	NA	55.60	20.00	50.00
15	56.70	50.00	70.70	NA	59.00	87.00	75.80	NA	58.80
16	68.10	NA	76.70	100.00	92.00	87.50	91.70	NA	72.70
17	74.70	100.00	79.00	100.00	80.00	NA	91.70	57.10	85.00
18	84.30	88.90	80.50	88.90	82.10	NA	92.00	100.00	82.50
19	86.40	100.00	91.90	88.00	84.50	88.20	93.30	100.00	95.70
20	94.30	100.00	97.50	87.40	100.00	NA	93.00	100.00	100.00
21	92.90	66.70	95.80	75.00	100.00	NA	100.00	100.00	82.90
22	95.00	100.00	97.90	92.60	84.00	NA	95.70	100.00	97.10
23	94.00	94.70	95.60	100.00	96.70	100.00	95.00	88.20	100.00
24	94.40	77.80	97.40	100.00	97.10	100.00	97.60	90.90	93.80
25	94.20	94.70	95.60	93.20	92.30	96.40	95.50	100.00	97.60

BEST COPY AVAILABLE

Proportion of young people employed:1900

Females

	NW/NW	IR/IR	IR/NW	G/G	G/NW	IT/IT	R/R	IN	FS
Age	0.60								
10	0.60	NA	0.00	NA	2.00	NA	0.00	0.00	11.10
11	1.80	NA	2.40	NA	0.00	NA	4.40	0.00	0.00
12	2.80	NA	0.00	0.00	9.50	NA	3.90	0.00	0.00
13	15.70	NA	17.40	NA	21.10	28.60	18.20	NA	0.00
14	24.20	NA	41.70	NA	34.00	NA	51.60	0.00	5.90
15	34.30	NA	55.80	53.50	53.10	NA	64.90	50.00	46.20
16	51.20	50.00	64.40	63.90	76.10	NA	74.40	44.40	38.90
17	54.80	87.50	65.20	NA	64.00	35.30	82.90	57.10	53.90
18	57.30	76.50	59.10	53.80	48.30	20.00	81.30	40.00	50.00
19	50.40	77.40	66.70	51.70	57.90	14.30	53.80	66.70	79.40
20	43.90	80.90	71.00	40.70	44.70	22.50	54.60	63.60	75.00
21	50.40	63.20	52.20	40.00	42.10	NA	39.00	NA	57.70
22	48.20	71.40	68.90	49.30	42.40	8.10	29.70	70.00	56.50
23	33.70	62.10	59.40	32.30	50.90	11.10	21.20	30.00	37.50
24	40.10	57.60	59.90	31.00	20.70	18.20	9.90	58.30	48.70
25	33.30	52.20	39.70	22.10	18.60	27.30	15.10	33.30	58.50

BEST COPY AVAILABLE

Table 6

Household Status and Ethnicity, 1850 and 1880

% Child

Age	Year	Male NWA/ NWA	Male NWA/ GER	Male GER/ GER	Male NWA/ IR	Male IR/ IR	Male BLACK NORTH	Male BLACK SOUTH	Female NWA/ NWA	Female NWA/ GER	Female GER/ GER	Female NWA/ IR	Female IR/ IR	Female BLACK NORTH	Female BLACK SOUTH
10															
	1850	83.70	NA	82.80	NA	80.80	67.60	57.70	82.80	NA	87.10	NA	71.10	64.50	57.70
	1880	83.80	95.40	100.00	89.50	75.00	66.00	68.10	73.80	91.90	87.50	84.60	100.00	66.50	67.80
	1900						92.30	88.90						66.70	88.90
11															
	1850	88.60	NA	85.20	NA	81.80	74.00	50.00	78.80	NA	92.90	NA	71.40	68.60	48.40
	1880	95.20	93.40	90.90	95.50	83.30	62.10	82.80	76.80	90.90	100.00	86.00	100.00	68.50	51.20
	1900						100.00	75.00						80.00	77.80
12															
	1850	85.10	NA	80.80	NA	82.40	65.30	52.60	78.00	NA	90.00	NA	65.90	62.10	47.60
	1880	87.90	90.90	71.40	85.70	100.00	66.10	54.60	72.80	86.80	81.80	83.80	100.00	70.10	53.50
	1900						87.50	75.00						70.00	70.00
13															
	1850	76.40	NA	87.90	NA	80.50	63.00	62.90	78.10	NA	75.90	NA	73.80	54.70	48.30
	1880	91.60	94.20	83.30	85.40	100.00	61.00	47.90	72.20	87.90	72.70	84.00	80.00	57.30	49.30
	1900						100.00	80.00						100.00	90.90
14															
	1850	75.40	NA	75.00	NA	65.50	54.00	45.20	73.30	NA	72.70	NA	45.70	56.10	39.10
	1880	89.30	87.60	75.00	91.30	80.00	62.70	54.90	76.70	83.40	35.00	79.00	73.80	63.90	44.90
	1900						100.00	100.00						100.00	70.60
15															
	1850	71.30	NA	68.40	NA	65.30	58.30	41.20	64.30	NA	88.00	NA	56.60	54.00	49.00
	1880	83.00	94.10	72.00	89.10	75.00	56.70	55.60	83.90	82.40	90.00	90.40	58.40	53.60	30.00
	1900						100.00	83.30						100.00	76.90
16															
	1850	65.90	NA	62.50	NA	70.60	48.40	50.00	71.10	NA	67.50	NA	43.90	55.30	32.50
	1880	85.60	89.50	53.90	84.70	58.90	46.70	49.00	76.80	76.90	69.20	72.30	41.30	57.40	30.70
	1900						50.00	63.30						100.00	72.20
17															
	1850	55.70	NA	39.70	NA	42.00	46.50	50.00	56.60	NA	46.30	NA	33.70	45.30	44.70
	1880	85.40	88.30	46.20	90.80	50.00	61.20	50.00	65.40	78.60	72.70	86.20	43.60	43.10	19.10
	1900						100.00	45.00						50.00	76.90
18															
	1850	60.00	NA	36.20	NA	41.00	45.10	50.00	50.80	NA	48.60	NA	24.50	40.60	29.30
	1850	79.40	80.30	68.40	77.80	70.00	48.10	39.10	54.80	77.10	36.80	79.50	38.00	34.10	16.40
	1900						60.00	38.90						80.00	34.50
19															
	1850	48.20	NA	41.50	NA	39.00	42.10	41.20	40.20	NA	16.10	NA	22.60	29.50	19.60
	1880	69.80	78.10	69.00	74.60	52.80	46.20	25.50	55.70	73.00	25.40	65.70	21.60	29.70	11.00
	1900						50.00	47.80						50.00	38.20
20															
	1850	48.60	NA	12.60	NA	22.60	38.60	45.70	37.30	NA	23.80	NA	17.00	28.50	12.00
	1880	66.50	79.30	39.90	80.30	36.00	32.60	21.60	46.40	64.30	15.20	60.20	20.00	29.40	7.30
	1900						62.50	9.50						54.60	40.60

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Table 5 cont.

21															
	1850	47.20	NA	23.20	NA	28.80	31.30	32.00	30.60	NA	15.10	NA	13.80	23.90	10.60
	1880	63.30	66.90	26.60	72.70	32.90	36.10	16.20	45.80	55.00	12.70	56.90	10.80	24.60	6.90
	1900						18.20	37.10						75.00	29.60
22															
	1850	37.60	NA	11.30	NA	17.00	20.40	33.90	26.50	NA	8.80	NA	11.60	19.30	8.10
	1880	56.70	54.10	20.00	69.60	37.60	27.80	12.50	31.00	47.50	13.20	39.50	20.50	23.50	6.50
	1900						28.60	17.70						40.00	16.20
23															
	1850	29.30	NA	8.30	NA	15.20	27.60	8.50	19.90	NA	9.60	NA	8.40	12.80	14.40
	1880	48.70	69.30	11.50	45.00	24.70	25.20	8.70	33.00	39.90	20.40	43.60	34.70	16.70	4.60
	1900						16.70	27.80						20.00	13.60
24															
	1850	26.00	NA	3.90	NA	15.20	17.70	10.90	26.50	NA	5.80	NA	13.20	9.10	13.30
	1880	34.40	44.60	14.20	54.00	22.10	22.80	8.50	26.20	26.30	10.90	33.20	19.50	12.60	2.80
	1900						25.00	15.60						30.80	9.80
25															
	1850	9.60	NA	5.50	NA	8.80	10.60	12.50	15.90	NA	7.60	NA	6.00	10.30	7.50
	1880	49.50	38.80	8.60	37.70	12.50	13.60	5.60	21.40	38.60	11.50	41.90	6.10	13.10	2.80
	1900						0.00	4.80						22.20	17.00
26															
	1850	2.00	NA	6.20	NA	0.30	5.90	9.30	17.20	NA	10.20	NA	3.80	6.30	4.80
	1880	28.80	32.50	2.60	35.30	8.10	13.10	6.50	24.00	17.50	3.50	32.50	9.50	10.60	6.40
	1900						16.70	2.70						0.00	6.10
27															
	1850	13.60	NA	5.10		2.50	14.60	9.60	10.70	NA	3.50	NA	7.60	12.80	5.70
	1880	39.40	27.60	11.40	61.20	14.20	11.80	5.60	17.60	13.60	5.20	16.40	6.00	13.10	3.20
	1900						14.30	3.50						20.00	10.80
28															
	1850	12.90	NA	3.70	NA	3.50	6.40	2.10	10.70	NA	2.00	NA	4.60	8.30	5.30
	1880	17.40	40.40	2.70	25.80	8.80	12.60	4.80	17.80	22.20	5.90	27.30	7.80	12.00	4.70
	1900						12.50	2.40						18.20	8.80
29															
	1850	16.10	NA	2.20	NA	5.40	5.10	7.60	7.50	NA	3.00	NA	0.30	6.80	5.60
	1880	24.20	14.30	8.30	31.70	5.30	12.40	5.40	12.60	26.00	4.80	24.20	0.00	4.60	3.00
	1900						0.00	6.10						22.20	5.30
30															
	1850	7.90	NA	4.50	NA	4.40	4.60	4.40	8.50	NA	3.90	NA	3.30	5.20	2.40
	1880	14.20	15.70	3.30	29.30	7.20	11.00	2.40	9.60	14.30	3.80	23.60	10.90	6.40	3.70
	1900						0.00	5.70						0.00	4.10

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Table 6A

Proportion of young people living with parents:1900

Males

Age	NW/NW	IR/IR	IR/NW	G/G	G/NW	IT/IT	R/F	BN	IS
10	93.30	NA	97.60	100.00	95.10	NA	94.10	92.30	88.90
11	92.50	NA	100.00	NA	97.70	NA	100.00	100.00	75.00
12	94.50	NA	95.10	NA	100.00	NA	100.00	87.50	75.00
13	95.20	NA	93.40	NA	96.80	NA	87.10	100.00	80.00
14	91.40	NA	88.90	NA	95.90	84.60	100.00	100.00	100.00
15	82.90	60.00	95.40	NA	99.00	73.90	97.10	100.00	83.30
16	88.10	NA	90.90	80.00	89.30	56.30	78.30	NA	63.60
17	83.20	50.00	90.20	63.90	86.40	NA	79.00	100.00	45.00
18	80.70	100.00	87.00	66.90	79.30	NA	75.00	60.00	38.90
19	75.00	0.00	79.90	60.20	82.80	88.20	71.00	50.00	47.80
20	69.10	20.00	80.50	70.80	82.10	NA	50.00	62.50	9.50
21	60.00	66.70	79.10	41.70	62.10	46.20	50.00	18.20	37.10
22	49.60	23.10	77.10	51.10	64.00	46.20	32.70	28.60	17.80
23	45.60	26.30	69.60	27.30	62.50	23.10	31.00	16.70	16.70
24	42.00	15.80	73.80	52.60	46.00	12.50	22.60	25.00	31.30
25	33.10	15.00	47.90	32.10	50.00	14.30	8.90	0.00	28.60
26	40.80	12.50	50.00	28.30	47.20	18.20	17.00	16.70	48.70
27	24.10	11.10	52.10	8.30	36.60	0.00	12.30	14.30	37.90
28	26.10	8.80	39.10	0.00	33.30	11.80	7.60	12.50	46.30
29	18.30	7.40	38.10	0.00	34.40	5.30	2.70	0.00	33.30
30	13.10	0.00	37.30	4.40	21.30	2.70	2.60	0.00	39.70

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Table 6A, p.2

Proportion of young people living with parents:1900

Females

Age	NW/NW	IR/IR	IR/NW	G/G	G/NW	IT/IT	R/R	EN	ES
10	95.00	NA	95.20	NA	98.10	NA	100.00	66.70	88.90
11	86.70	NA	92.70	NA	96.60	NA	95.70	80.00	77.80
12	86.70	NA	94.90	79.40	96.40	NA	100.00	70.00	70.00
13	90.40	NA	89.20	NA	95.50	92.90	100.00	100.00	90.90
14	88.20	NA	94.40	NA	96.70	NA	100.00	100.00	70.60
15	84.10	NA	93.50	46.50	88.60	NA	92.70	100.00	76.90
16	86.10	25.00	85.70	36.10	91.40	NA	90.70	100.00	72.20
17	85.40	37.50	89.80	NA	81.50	58.80	74.40	50.00	76.90
18	79.90	23.50	85.70	72.30	75.90	20.00	69.70	80.00	34.50
19	63.10	15.00	78.20	43.10	62.50	21.40	49.40	50.00	38.20
20	63.80	14.40	74.60	16.30	77.60	8.10	38.20	54.60	40.60
21	53.80	25.00	69.60	20.00	64.60	12.50	38.10	75.00	29.60
22	44.70	19.10	66.00	30.90	60.00	25.00	27.00	40.00	16.20
23	44.70	16.70	61.10	21.50	56.00	5.60	26.50	20.00	13.60
24	35.00	13.70	59.90	7.80	56.30	NA	12.40	30.80	9.80
25	32.10	2.50	42.20	4.40	43.30	NA	15.10	22.20	17.00
26	26.90	7.30	46.20	0.00	40.60	10.00	2.40	0.00	6.10
27	24.60	2.70	39.90	8.40	44.40	0.00	3.90	20.00	10.80
28	23.70	14.30	41.30	4.90	35.40	6.70	3.70	18.20	8.80
29	25.60	4.30	33.30	0.00	26.90	NA	0.00	22.20	5.30
30	22.10	11.30	39.10	4.10	15.00	0.00	1.80	0.00	4.10

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II. HOUSEHOLD STRUCTURE

Elsewhere, I have argued that five great changes in household structure took place during industrialization. They were: (1) the nuclearization of the household; (2) the prolonged co-residence of children with their parents; (3) the decline in marital fertility; (4) the separation of home and work; and (5) the increased time which married couples had together after all of their children had left home. With the evidence here, we can see whether this argument holds for the first two propositions in Philadelphia in the last half of the nineteenth-century. In this section, I will deal with the former -- the household -- and turn in the next section to the residential patterns of young people. The two, as I will show, were intimately linked together.

The hypothesis I set out to test in Hamilton and Buffalo was that a relation existed between family cycles, structures, and economies. The initial supposition was that families experiencing their periods of greatest strain, when all children were young and the wife was out of the workforce, would be the most likely to take in boarders and relatives as a way of supplementing their family income. This hypothesis turned out to be false. With the exception of female headed families, it was the families undergoing the least strain who had the greatest numbers of boarders and relatives. Indexes showing the relation of families' wage-earning potential to their family cycle stages showed the

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same thing: the families in the most difficult circumstances had the fewest extra resources.

Households in Hamilton did change during industrialization: most notably, they lost many of their boarders and relatives. This is what I called the nuclearization of the household, its progressive stripping down to husband, wife, and children. By contrast, some British historians have argued that households became more complex during early industrialization. Thus, it could be that the process I observed in Hamilton between 1850 and 1870 was reversed in the latter years of the century. Although this remains to be tested for the Canadian city, we can examine the issue for Philadelphia.

The Philadelphia analysis introduces another element: race. There were very few blacks in Hamilton. So we enter the Philadelphia analysis with little against which to compare the black experience in Philadelphia. However, as the previous section has shown, there were profound differences in the labor market experience of blacks and whites in the last half of the nineteenth-century, and it is reasonable to suppose that in some ways these were reflected in different patterns of household organization as well.

In fact, as Table 1 shows, there were striking differences in the household structure of blacks and whites in Philadelphia during the last half of the nineteenth-century. Note, first, the proportions in each family cycle stage. These stages are the same

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ones I developed for use in Hamilton and Buffalo. They are based on the age of the wife. Wives are divided into age groups: under (1)25, (2)25-34, (3) 35-44, and (4) 45 and over. Within each groups they are divided first into women with and without children (CH1-14/CH/NC, hereafter). The women without children are then subdivided in various ways. These include, for the older two groups, families (M15+) with at least one male age 15 or over (that is, those with a working-age son) and those all of whose children age 15 or over were daughters (F15+).

The proportions of whites in each cycle stage over time shows the gradual aging of the population, undoubtedly a function of immigration patterns. See, for instance, the drop in the proportion of Wife under 25, no children (hereafter, W1NC) from 5% to 3% and the rise in the oldest group, W4NC from 6% to 8%. Although the proportion of black households in each cycle stage changed a bit less, there were dramatically more with no children than among whites. For example, among the youngest (W1) the proportion without children in 1880 was, blacks 6% and whites 3%; for W2 families they were 12% and 5%; for W3 9% and 4% and for W4, 17% and 12%. Overall, the proportions of households with no children among blacks and whites were, in 1850, 38% and 18%; 1860, 31% and 18%; 1870, 41% and 24%; and 1880, 39% and 21%. The question is why. Not enough is yet known about fertility to assess its influence. Fecundity, too, could be an important issue given the poverty of the blacks. So could infant mortality and female

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headedness. As will be pointed out shortly, there were proportionally many more black than white female headed families, and, in 1880, 38% of white and 54% of black female headed families had no children.

There also were different black and white patterns in the proportion of households that contained a relative. (Recall that before 1880 the identification of household members as relatives or boarders was inferred by the PSHP.) Between 1850 and 1880 the proportion of white households with relatives declined in all phases of the family cycle. The proportion among blacks showed no consistent patterns. For example, the white proportion among W2CH dropped from 14% to 9% during these 30 years. But between 1880 and 1900 the proportion of white households with at least one relative rose during every stage of the family cycle and in some of the black ones. For example, among whites, the proportion of households with at least one relative increased between 1880 and 1900 for W3CH1-14 from 9% to 16% and for W4M15+ from 8% to 16%. Between 1850 and 1900, it was usually white families with no children at home that had the highest proportions of relatives. For example, in 1850, among W1, 23% had a relative when no children lived at home and 12% when there was a child under 5. But this pattern disappeared by 1900. Among blacks, too, the proportions of families with relatives was highest among those without children between 1850 and 1880 but not in 1900. In fact, in each year white families without children usually had more kin

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than did black families. For example, among W2 families in 1900, the white - black proportions with at least one kin among families without children were 24% and 12%; in 1900, they were 21% and 14%. In 1850, more white than black families with children also had relatives. But by 1880 this pattern had been reversed, and by 1900 in most instances black families with children had kin more often than did white ones.

The proportion of white families with boarders declined steeply throughout the last half of the century, with a particularly notable drop occurring (as in Hamilton) between 1850 and 1860. For example, among W2CH, the proportion with boarders dropped from 44% to 17% during the last half of the century and among W415+ in the same years from 40% to 18%. Between 1850 and 1880 the proportion of black families with boarders also declined, though not as steeply as among whites. However, between 1880 and 1900 in most instances the proportion of black families with boarders rose. For instance, among W2CH it increased from 29% to 45% between 1880 and 1900 and among W4M15+ from 31% to 38%. In 1850, in most instances whites had slightly more boarders than blacks. In 1900, blacks had many more. Clearly, black households were not stripping down in the same way as white ones. Note, too, that in most istances there were more boarders among families with no children.

The figures for households with at least one boarder or relative follow the same trends already sketched. Note that when

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relatives and boarders are considered together, an extraordinary number of households had extensions. In 1850, among W1, the proportions were whites 53%, blacks 54%; in 1880 they were 36% and 42% and in 1900, 32% and 48%. Among W2 households, the proportions were 56% for whites and 52% for blacks in 1850 and 38% and 46% in 1900. In 1900, 55% of black W4M15+ and 50% of W4F15+ households had either one relative or boarder. These figures are, of course, snapshots, and most relatives and boarders lived only a relatively short time with any one household. Thus, the figures here reinforce one of the main conclusions of the Hamilton study: namely, that most households at some point in their history probably contained either a boarder or relative. These figures also reinforce another key conclusion of the Hamilton and Buffalo analyses: those families with young children -- that is, those undergoing the most economic strain -- were the least likely to have extra members who could provide additional income.

Finally, female headed families. This is were another great difference between black and white households appears. By and large the proportion of female headed white households did not change very much during the last half of the nineteenth-century. Among W1CH it was 7% in 1850 and 1900; among W3M15+ the proportions were 12% and 13%. However, there were dramatically more black female headed households. Among W1CH, the white proportion in 1850 was 1% and the black proportion 11%; in 1900 the same two proportions were 1% and 10%; among W3CH1-14, in 1850

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the white proportion was 7% and the black 22%; in 1900 they were 6% and 16%; for W4M15+ in 1850 they were 31% and 43%; in 1900, 31% and 45%. As the latter figure indicates, the proportion of older (45+) black women who headed households was extraordinary (a reflection, probably, of earlier death among black men). The odds were about even that a black women 45 years old or over with children would not be living with her husband. These odds were far greater than those for whites. Among all households, the proportion of white female headed families increased between 1850 and 1900 from 13% to 15% and the proportion among blacks dropped from 30% to 23%. All of the decrease among blacks occurred after 1880.

Within these general patterns, two more issues are worth some exploration. One is the question of the number of extensions living with families. How often did families have more than one relative or boarder? This is one way to infer whether there were likely to have been very many multiple households, that is, households with two or more families living together. For a household to have been multiple, it would need to have included at least two relatives or boarders. Remember that the PSHP has argued that there were significantly more multiple families among blacks than whites. The other question is the difference between male and female headed households. Were female headed households more likely to be extended? Tables 2, 2A and 2B have some answers to these questions.

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Note, first, the decrease in the proportion of white households with extensions. (Table 2) The big drop occurred between 1850 and 1860 when the proportion with no relatives or boarders rose from 49% to 63%. Note, too, the decrease in the proportion with 3 or more relatives or boarders from 18% to 11% between 1850 and 1880. In 1850, 30% of white households had two or more boarders or relatives, a proportion almost cut in half by 1900. Although the proportion of black households with no boarders or relatives also rose, though only a little, from 53% to 58%, the proportion with two or more relatives increased from 26% to 30% between 1850 and 1900. Thus the trends in household organization among blacks and whites went in opposite directions. The reasons, unfortunately, are not clear. One possibility, though, is that black households were augmented by the large number of immigrants from the South who, by 1900, outnumbered the Northern born blacks in Philadelphia.

Almost identical proportions of black and white households had only one relative or boarder, and, before 1900, although more blacks had two or more extensions, the differences between them and whites were only around 4 or 5 percentage points, or 6% - 7%. This means that only around 6% more black than white households could be multiple, that is, could contain two or more families. This is not a very large difference.

Table 2A shows the mean number of boarders and relatives by the sex of household heads in black and white families in 1900. It

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shows, first, that female headed households were more likely to have a boarder or relative. Clearly, women heading households often supported themselves by taking in boarders and relatives. Second, there was relatively little difference in the proportion of male-headed black or white households with a boarder or relative at different family cycle stages. However, among female headed households, those with no children were usually more likely than others to house a boarder or relative. Again, these women would have the greatest need for extra income and, perhaps, they had some extra room as well.

Some of these trends are reflected in Table 2B, which excerpts some of the results of a multiple classification analysis of household structure in 1850 and 1900. The dependent variable was the number of relatives plus boarders. The first important feature of the table is the small R-Square (4%-6%), which shows that there was little systematic relation between household structure and various social and demographic characteristics (family cycle stage, birthplace, occupation, property ownership). This is exactly the result found in parallel analyses of Hamilton and Buffalo. The other point in the table is the comparative figures for blacks and whites across the half century. The figures represent the expected number of boarders and relatives in a given category with other factors held constant. The categories shown are all families and families without working-age children in three family cycle stages. The patterns for blacks and whites are

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opposite, indeed, dramatically so. In 1850, the expected number of boarders and relatives in white families was 1.3; in black, .69, or almost half. By 1900, the relative numbers had switched. For whites, it had declined to .9 and for blacks it had risen to 1.22. The same switch took place in each of the family cycle categories. Indeed, when these categories are considered separately, the changes are even larger. Clearly, the dynamics of black and white household organization differed in important ways.

The next series of tables shows differences between white ethnic groups and between blacks born in the North and the South. Table 3 shows the proportion with at least one relative. It shows that there was no consistent pattern to the differences between blacks. Among whites, the proportion of Germans with at least one relative declined least because the Germans had the fewest to begin with. In general, trends among different birthplace groups were quite similar, and the groups were closer in the latter part of the century than in the middle.

Between 1850 and 1880 there were few differences in the proportion of Northern and Southern born black households with at least one boarder. (Table 4) However, by 1900, in all but one instance, Southern born black households more often had a boarder. For example, among W2CH, the proportions for Northern and Southern born were 33% and 50%, for W3M15+ they were 13% and 25%, and for W415+, 13% and 41%. These patterns support my supposition that the great increase in extensions among black families reflected the

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migration from the South.

Among whites, natives had the highest proportion of boarders in 1850. Except among older families, there was little to differentiate birthplace groups in 1880, however. (In that year, among W415+, 41% of native families had a boarder compared to 22% for both German and Irish.) By 1900, this remaining distinction had disappeared.

When boarders and relatives are considered together, some of the differences already noted are muted. (Table 5) Most notably, the 1900 distinction between black families born in the North and South largely disappears. Among whites between 1850 and 1880, natives had the highest proportion of households with a relative or boarder among families where wives were at least 35 years old. By 1900 this distinction had largely disappeared. The major points, again, are that it was common for families to have a relative or boarder and that there was only a marginal relation between the presence of extensions and family cycle stage.

As noted already, there were extraordinary differences in the proportion of female headed families among whites and blacks. These differences are broken down by birthplace in Table 6. There was little difference in the proportion between Northern and Southern born blacks in 1850 and 1860. In 1870 the Northern born began to have a higher proportion, and their lead in this respect solidified in 1880 when, for instance, among W2CH, the proportion of female headed households among the Northern born was 16% and

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the Southern born 12%; for W3M15+ the proportions were 41% and 29%, and for W415+ they were 65% and 48%. By 1900, however, there once again were no consistent distinctions between the groups. I don't know how to explain these patterns.

Among whites through 1880, there were generally similar proportions of female headed families among the native born and Irish but lower ones among the Germans. In 1900 the distinction between the groups had decreased, although the German proportion was usually a bit lower than the Irish and native one. There were few consistent patterns among the new immigrant groups, the Italians and Russians. This is partly on account of the small number in the sample. The most that can be said about them is that in terms of household organization -- extensions, female headship -- they did not differ very much from other households.

In mid-nineteenth century Hamilton and Buffalo wealthier families were more likely to house boarders and relatives. To some extent the same was true in Philadelphia, as analyses of proportions by occupations show. First, consider relatives. (Table 7) In 1850, among white families less than 45 years old, more business class than working class families had at least one relatives. There were some exceptions among the skilled workers. Indeed, the groups with consistently fewest were the semi and unskilled workers. Where wives were at least 45 years old, there was not much difference. After 1850, these differences largely disappeared. What did remain, though, was the distinctiveness of

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female household heads. Almost all white female household heads without children had a relative present.

Small numbers make it difficult to interpret patterns among blacks before 1900 and impossible in that year. The most that can be said is that there was little distinction within the black working class. There were, however, large differences between black and white female headed households between 1850 and 1880. Fewer black female headed households contained relatives. For example, in 1880, among W1NC, the proportion of black female headed households with relatives was 18% compared to 100% of whites; for W2, the proportions were identical, for W3, white 100% and black 10%; for W4, white 96% and black 14%. These patterns probably reflect the difference labor force participation of black and white women. As a later section of this paper will show, adult black women worked for wages far more often than white women. Thus, they had less need to support themselves by taking people into their households.

There were more dramatic class related differences in the proportion of households with boarders than with relatives. (Table 8) Again, this is consistent with the pattern in Hamilton and Buffalo. Among whites, business class households were much more likely to have boarders than working class ones in 1850. For example, the proportions among W1CH, were, P&P 73%, MM 65%, SKW 26%, and UNSKW 24%. For W3/CH1-14 the same proportions were 69%, 48%, 38%, 31%. By 1880, the proportion for male-headed households

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in each occupational group had dropped, although among families with children the business class still retained the lead, the differences were small and not consistent. However, by 1900 the class ranking had changed. In that year, the major distinction among families with children, especially younger families, was the increase in the proportion of unskilled workers' families with boarders, which, now, usually ranked highest. For example, among W1CH, the proportions were P&P 29%, MM 0, SKW 21%, and UNSKW 34%. The same proportions among W2CH were 21%, 15%, 14%, and 30%. Clearly, the social structure of boarding had shifted. It is possible that by 1900 families most in need of extra income were beginning to take in boarders.

Families without children, however, did not consistently have more boarders. Among women, between 1850 and 1880 the proportion with boarders was consistently high, especially among those with no children. In 1900, female headed households generally had the highest proportion of boarders, though there was not much distinction between those with and without children.

There were few consistent patterns among blacks. Occupation does not seem to have been an important influence on household structure among them. On the average, households, especially those without children, headed by black women did seem to have somewhat more boarders.

In general, business class white households had more relatives and boarders than working class ones in 1850. (Table 9).

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However, the proportion of households with extensions declined especially steeply within the business class during the last half of the century. For example, in 1850, 94% of PP households without children had either a boarder or relative compared to 26% in 1900. For W3CH1-14 households the P&P decline was from 72% to 37%. By contrast, the proportion of unskilled workers' families with a relative or boarder either rose or declined relatively little. For the same two categories of household the unskilled workers' proportions in 1850 and 1900, respectively, were 45% and 58% and 39% and 33%. In 1850 it was probably unusual for a business class household not to have relatives or boarders at some point during its history. By 1900 the chances, though still substantial, had been greatly reduced. By contrast, the odds that an unskilled workers' family would have a relative or boarder declined between 1850 and 1880 but bounced back in the last two decades of the century. Almost all women household heads without children, of course, had a relative or boarder, and even those with children had among the highest proportions in each family cycle category.

The occupational distinctions among blacks are unclear. Again, among female-headed households without children, blacks were much less likely than whites to have relatives or boarders (again a reflection of their high labor force participation).

Thus, white household structure in Philadelphia between 1850 and 1880 looks much like the pattern in Hamilton and Buffalo. In the mid-nineteenth century many families had either a relative or

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boarder living with them, but the history of domestic organization in the next decades is the decline of the extended household. Moreover, it was business class families who, especially at mid-century, were the most likely to house relatives or boarders. Therefore, the families most in need of extra income -- young working class families with children -- had the least help. Aside from the understandably high number of extensions in female headed households, there was little relation between the presence of boarders and relatives and family cycle stage. These white trends continued throughout the century with one major exception, the notable rise in the proportion of extensions in unskilled workers' households in 1900. This hints at the changing social structure of household organization. Among white families there were relatively few birthplace differences in household structure.

The other great pattern is the difference between black and white households. First was the dramatic difference in the proportion of female headed households. Black households were much more often headed by women. Next was the different trend in household structure. The proportion of black families with a relative or boarder declined much less than did the proportion of white families between 1850 and 1880. And between 1880 and 1900 it increased. As a result, fewer black households than whites in 1850 and more in 1900 had extensions. The third major difference was that black female household heads without children were much less likely than whites to have relatives or boarders. These

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differences between white and black families probably reflect two major forces. One is the migration of blacks to Philadelphia from the South in the late nineteenth-century. By 1900, Southern born blacks outnumbered Northern born in the city. This migration probably put a great strain on housing. Second is the high labor force participation of black women. Not as many of them needed to take in boarders or relatives because they could earn wages outside of their homes.

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III. TRANSITIONS

In Hamilton changes in the labor market, household structure, and the transition to adulthood all intersected. As young people found industrial jobs near home, they lived longer with their parents and less often as boarders. The decline in extended households reflected shifts in the residential patterns of young people rather than any dramatic shifts in ideas about the composition of domestic units. In Philadelphia, there were a few noteworthy shifts in the youth labor force and marked changes, as we have seen, in household structure. The question remains whether the residential patterns of young people altered as well, whether, that is, young people in Philadelphia began to live longer with their parents. Three other components of the process which I am calling the transition to adulthood must be analysed as well. One is the age at which young people left school (treated in the next working paper). The others are the age at which people started to work and when they married. Both are discussed in this section. First, however, one preliminary matter of great importance: sex ratios.

Sex ratios are of importance because of their influence on marriage and on female employment. Marriage was largely endogamous. This means that the availability of potential partners was greatly affected by the sex ratios within birthplace groups.

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Women who did not marry, moreover, would have had to find some way of supporting themselves and, we might suppose, would have had higher rates of employment. Thus, the hypothesis here is that a surplus of males in a birthplace group led to an earlier marriage age for men and that a surplus of females led to a high rate of female employment and a low and late pattern of marriage.

Note that the sex ratios to be discussed here probably are the product of both migration and mortality. Small numbers in the tables for Irish and German born make interpretation difficult in 1880 and 1900. Also, people generally did not marry others of exactly the same age. One really should examine the numbers of women in a group compared to the numbers of men about four years older. Here, however, the more conventional method of basing sex ratios on men and women of the same age is used. In the discussion that follows, ratios less than 1.0 reflect a surplus of women.

The major trends in sex ratios are shown in Table 1. First was a large surplus of men among the German born. This decreased some between 1850 and 1880 and, then, dropped again by 1900. For example, among 26 year olds, the sex ratios dropped from 169 to 125 to 124 and among 30 year olds from 148 to 131 to 84.

Patterns among the native born of native parents shifted. In most cases, there were more females than males, but there were some exceptions in 1850. In general, sex ratios declined between 1850 and 1880, and a modest abundance of women emerged. This was reversed by 1900, when ratios were near unity. For example, among

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21 year olds, sex ratios went from 131 to 96 to 100. These shifts are hard to explain and must result from changing patterns of internal migration.

Among the Irish born there generally were more women than men over the age of 20. However, over time ratios generally declined, suggesting a heavier female than male migration (which also was the case in Hamilton). For example, the ratios among 21 year olds changed from 85 to 82 to 43 between 1850, 1880, and 1900; among 25 year olds they went from 92 to 48 to 50.

In 1880, the sex ratios among native born children of Germans generally was between that of the native born children of natives and the German born. In most groups under the age of 27 there were more females than males. For example, at age 18 the sex ratios were 86, 25, and 80 in 1850, 1880, and 1900, respectively. But in 1850 and 1880 over the age of 27 there were more males than females in most cases. By 1900, however, females exceeded males at most ages over 24.

Among the native born children of Irish parents, sex ratios were reasonably balanced under the age of 19. In 1880, among those older than 19, with the exception of 21 and 28 year olds, there was a general drop in the ratios over time. By 1900 the pattern was mixed, without clear trends.

Among the Italians, there was a real excess of men. In 1900, for instance, the sex ratios at age 21, 25, and 30 were 167, 250, and 163. (We will see the effect of these ratios on marriage

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patterns.) Among Russians in 1900, sex ratios were either near unity or skewed toward males. For example, at ages 21, 25, and 30 they were 73, 104, and 143.

There was not much difference in the sex ratios of Northern and Southern born blacks. Overall, before 1900 both groups had the lowest sex ratios. The ratios for Northern born blacks were not much lower than those for the Irish, and they increased between 1850 and 1880. By 1900, though, at some ages there were dramatically more males than females among them. Small numbers make exact interpretation difficult, but they do point to a real shift, perhaps stimulated by improving job prospects (recall the shift out of service) which drew young men to the city.

Southern born blacks had the lowest sex ratios of all, especially among people in their late teens. Between 1850 and 1880 the sex ratios among 17 year olds dropped from 55 to 46, and among 19 year olds they increased from 37 to 47. Among 20 year olds they shifted from 35 to 29. Thus, there were about 3 female 20 year olds for every male, a fact whose implications deserve a great deal of study. By 1900 with increased migration the excess of women lessened. In that year the sex ratio for 17 year olds had increased from 46 in 1880 to 77 and for 20 year olds from 29 to 66. Although the ratios increased some with age, they still remained low, increasing from 1850 to 1880 to 1900 among 25 year olds from 46 to 69 to 79. In 1900, at some ages (for example 16, 21, 26, 28, and 30) an excess of men actually had emerged. This,

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indeed, was a dramatic shift, again, as in the case of Northern born blacks, probably a result of the increased migration of men attracted by the prospect of industrial work.

One important aspect of the distinctions in sex ratios between blacks and whites through 1880 emerges at age 30. By that time, in most cases among whites, ratios had evened out, or, as with Germans, males had come to predominate. However, black sex ratios stayed very low. There was no catch-up process brought about by the later in-migration of young men. This means that many black women never would have a potential spouse in the city. This may be one reason why so~~me~~ many of them worked (as will be clear shortly). However, by 1900 this situation had changed. Then, sex ratios were high at age 30, 125 and 118, for both Northern and Southern born blacks. Once again, the years between 1880 and 1900 appear a critical turning point in the history of blacks in Philadelphia.

Recalling my hypothesis, marriage among German young women should have been early and high (though less so over time) between 1850 and 1880. In 1900, Italian women should have married especially young. Before 1900 blacks, especially those born in the South, should have had a low and late marriage pattern.

The German pattern conforms to this hypothesis. (Table 2) In fact, through 1880 they had the highest proportion married at every age. At 19, 36% of German young women were already married compared to 23% of native whites and 8% of Irish. At 25, 69% of

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the Germans and 42% of natives and 38% of Irish had married. Young German women continued to marry early in 1900. In that year 31% of the 19 year olds and 78% of the 25 year olds had married. German men, however, did not marry earlier than others by and large. In 1880, the native born children of German immigrants married later than the German born ones..

Irish females, as one would predict on the basis of sex ratios, married late and less frequently than some other groups. The first 25% had married by the age of 22 in 1850. But among native young women, the first 25% had married by the age of 20 in 1850. In that year, 42% of 22 year olds were married. However, half were married at 23 in 1850 compared to 25 in 1880 and 26 in 1900. So there was a slowing down of the pace of marriage among them.

In 1900, Italian women married youngest of all: 73% of 18 year olds, 90% of 26 year olds, and 100% of 30 year olds, for instance, were married. This combination of a low sex ratio and early marriage, as much as cultural proscriptions, may have accounted for the low rate of employment among Italian women noted by other historians. Italian men also married somewhat earlier than others. For example, 69% of them were married at age 24, compared to 26% of native men of native parents in the same year.In 1900, Russians married earlier than other groups except the Italians: 34% of 19 year old females, 60% of 21 year olds, and 92% of 25 year olds were married. Among men in their early 20's

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the proportion was high, too, for example, 43% of 23 year olds and 62% of 25 year olds.

Between 1850 and 1880 there was a slight tendency for men to marry earlier, especially among the better off groups. In these years the proportion of married native white 23 year old men increased from 29% to 35% and of 25 year olds from 36% to 47%. The German proportion increased, too, while the Irish male trend went in the opposite direction.

As we should predict on the basis of the sex ratios, in 1850 black Northern born women had very low marriage rates, which increased by 1880 and 1900. In 1850, the proportion married in their early 20s generally was a little lower than among the Irish and very much lower among women in their late 20s. For example, at age 23 in 1850, the proportion of married Irish females was 38% and of black 31%. In 1880, the proportions were 64% and 49%. By 1900, the black proportion had risen to 70%. Similarly, among 25 year olds black females, the proportions rose from 37% to 61% to 75% at the turn of the century, a clear reflection of the impact of a more balanced sex ratio.

Marriage rates among Southern born black women, we should expect, were close to Northern born ones in 1850 but lower in 1880. Only around half of the Southern born black women in their mid-20s and 63% of the 30 year olds had married in 1880. However, by 1900, with changing sex ratios, there was a real rise in the proportion married: for example, among 23 year olds, from 37% to 50% to 61%

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and among 30 year olds from 42% to 63% to 75% between 1850, 1880, and 1900.

Where did young people live after they had married? Was there, as some historians have argued, an increase in co-residence in the latter part of the nineteenth-century. Tables 3 and 3A offer two ways of looking at the question. Table 3, based just upon the years 1850-1880, consists of an index. The index is 100 X the proportion in an age group who were married divided by the proportion who were household heads. An index greater than 100 shows that there were fewer household heads than people married among a given age group, in other words, that some proportion of the married lived in a household they did not head. A small index means that some people who were not married were heading households. They could be unmarried parents, a child who took over a household when parents died, or a single person taking in lodgers.

The first major trend is the increase in the index between 1850 and 1880 among all blacks. For example, the index for 21 year old northern born black males rose from 101 to 158 and for 25 year olds from 105 to 127; for 30 year olds it increased from 110 to 136. Among females, for example, it increased for Southern born 20 year olds from 100 to 142; for 23 year olds from 102 to 132 and for 30 year olds from 74 to 129.

Among native whites the index for males age 27 and over increased as it did for females of all ages. For example, for 27

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year old males it rose from 105 to 123 and for 25 year old females from 117 to 125.

One would expect the largest indexes among young, recently married people. In a rough way this pattern existed, though much more for women than for men. For native white females age 18 the index rose from 125 to 161, the highest for any age group in those years. The index for black Northern born females peaked at age 26 in 1850 and age 22 in 1880 (a reflection of their later marriage age). There were no similar trends for young men. The question is why? Were women more willing to live with their mothers after marriage? At any rate, these patterns reinforce the larger point that the co-residence of married children with their parents increased late in the century.

Table 3A shows patterns of co-residence in another way. It shows the proportion of married black and white males and females living with their parents in each of the census years between 1850 and 1900. Note, first, the increase among females between 1880 and 1900 and the smaller rise between 1870 and 1880. Almost no married 18-20 year old females were living with their parents before 1880. In 1880, the white proportion was 2% and the black 7%; in 1900, the white and black proportions had rise to 19% and 9%, respectively. There were similar, though less dramatic patterns, at other ages. For example, the proportion of white 25-27 year old women living with their parents increased from 1% to 7% between 1880 and 1900.

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Among males, also, the proportion increased by 1900 and was generally close to that for females. Before 1880, however, there was a slightly higher proportion of married men than women of most ages living with their parents. Note, especially, the high 17% of white 18-20 year olds (of whom, remember, only a very few were married) living with their parents in 1860. Perhaps this reflected problems during the depression of the late 1850's.

The proportion of black married women living with their parents generally was a bit higher than the white proportion in 1880 and lower in 1900. Among males age 18-20 and 21-24 the differences between blacks and whites were not consistent. In 1900, after age 21, as with females, fewer blacks than whites lived with their parents.

However, the major point is that by and large few married children lived with their parents. Those that did clearly were the exception. The modest rise in co-residence of married children and parents late in the century probably reflected a squeeze on housing supply.

The age at which young people left home pointed to a more fundamental shift than did the increase in the proportion of married children living with their parents. Recall, the goal here is to see if the pattern in Hamilton (one that other historians have found elsewhere, too) existed in Philadelphia. Did children begin to live longer with their parents during the latter part of the nineteenth-century? This hypothesis, of course, is central to

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the ideas about changes in the transition to adulthood which I have developed elsewhere. Fortunately, the answer is yes. Young people in Philadelphia were living longer with their parents in 1900 than in 1850, and these changes can be related to industrialization. Indeed, it is the timing of the shift in the black experience that shows the link between co-residence and industrial work most clearly.

First, consider young men and note the increase in co-residence among whites, especially natives. (Table 4) The proportion of 16 year old native males living with their parents rose from 66% to 86% to 88% from 1850 to 1880 to 1900. Among 20 year olds, the same proportions were 49%, 61%, and 69%. In 1850, 50% left home between 18 and 19 (later than in Hamilton, which was less industrialized at that time), in 1880 between 22 and 23, and in 1900 between 21 and 22.

A somewhat smaller, but still increasing, proportion of Irish and Germans stayed home. Among Germans, in 1850 half left between 16 and 17, in 1880 between 19 and 20, and in 1900 between 21 and 22. Half the Irish also left between 16 and 17 in 1850 but between 19 and 20 in 1880 and 21 and 22 in 1900. Germans, it will be clear from the employment figures to be presented later, left closer to when they found work. It is possible that they entered less industrialized crafts in 1850 and so had to take work farther away from their homes. Indeed, Germans in 1850 had much the lowest proportion of 20 year old males at home of any group, white or

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black (13% compared, for instance, to 23% of the Irish).

In 1900, Italians generally left earlier than other groups. At age 24, 13% of them were at home compared to 53% of the Germans and 16% of the Irish born children of immigrants. At age 27, none of the Italian young men in the sample lived with their parents, compared to 8% of the Germans and 11% of the Irish. Russians, by contrast, stayed home longer. In 1900, 23% of 24 year old Russian males were at home. Half left home around the age of 21.

In 1880, patterns among the native born children of immigrants were much more like those among the children of natives than among young people born abroad. For example, among those of German origin, the proportion of 17 year olds living with parents was 88% of the native born and 46% of the German born (compared to 85% of native born children of natives). For children of Irish origin, 91% of native born 17 year old males and 50% of Irish born remained at home. In fact, by 1900, the children of German immigrants remained at home longer than the native born children of natives, a real reversal of earlier patterns: for example, at age 20, 82% of the native born children of Germans, 71% of the German born, and 69% of the sons of native Americans still lived at home. Indeed, in 1900, the native born sons of Irish immigrants stayed home longest of all (although the proportion among the Irish born children remained fairly low). The proportion of native sons of Irish parents living at home at age 21 increased from 72% in 1880 to 79% in 1900 compared to 60% of the children of natives.

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At age 26, the native/Irish proportion increased between 1880 and 1900 from 35% to 50% compared to 40% among children of natives in the latter years. Half of the native children of Irish immigrants did not leave home until between the ages of 27 and 28 in 1900, compared to between 24 and 25 among the native children of Germans, the next highest group.

Patterns among black young men differed from whites. As the proportion of white males at home increased between 1850 and 1880, the proportion of blacks either stayed the same or decreased. It dropped much more among Southern than among Northern born blacks. Among the Northern born, half left home in both years between 15 and 16 years old. Among Southern born half left between 13 and 14 in 1850 and 12-13 in 1880. At age 21, the proportion of black Northern born men at home was 31% compared to 36% in 1880. Among the Southern born the proportion was halved, falling from 32% to 16%. In 1880, black Southern born men had the lowest proportion at home, for example, 8.5% at age 24.

All of this changed dramatically in the next 20 years as the proportion of black young men at home increased between 1880 and 1900. Half the Northern born now left between the age 20 and 21 and half the Southern born between 15 and 16. At age 17, the proportion of Northern born black males at home changed from 1850, to 1880, to 1900, from 46% to 62% to 100%. Among Southern born males, the trend was notable, especially, among younger boys. For instance, the proportion of 15 year old Southern born black young

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men living with their parents rose from 41% in 1850 to 56% in 1880 to 83% in 1900. Among 14 year olds, the increase was from 45% to 55% to 100%. In 1900, the proportion of Southern born black men age 25 and over living with their parents was extraordinary. For instance, 29% among 25 year olds compared to 6% in 1880 and 40% of 30 year olds compared to 2% twenty years earlier.

The explanation for these changes is that industrial jobs opened close enough to where native white and Irish families lived for young men to enter work and still live at home. Blacks, by contrast, continued in non-industrial jobs (notably domestic service) until late in the century. Because so many of them worked in service, they left home early and had to live at or near where they worked. Between 1880 and 1900, however, blacks began to leave service and enter industrial work. Thus, they were able to start work a little later and to find work nearer their families' homes. Thus, they, too, began to live longer with their parents. These patterns are strong support for the connection between industrialization and the increased co-residence of young people with their parents in the latter half of the nineteenth-century.

Young women, too, began to live longer at home, although the increase among them was smaller. More, of course, left earlier than men on account of marriage. Among native white young women, half had left home between the ages of 18 and 19 in 1850, 19 and 20 in 1880, and 20 and 21 in 1900. German born young women left about a year or two earlier, and Irish women left between 15 and

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16 in 1850 and at about 16 in 1900. These Irish figures reflect the high proportion of servants among them. As among males, the native born of foreign parents stayed at home longer than anyone else, including the daughters of natives. For example, among 18 year olds, in 1880, 77% of the native daughters of Germans, 37% of their German; 80% of the native daughters of Irish and 38% of their Irish ones; and 55% of daughters of natives still lived with their parents. Because they married so much earlier, Italian young women left home younger. Only 20% of the 18 year olds lived with their parents in 1900 compared to 59% of the 17 year olds. Russians stayed somewhat longer. Half left between 18 and 19.

Between 1850 and 1880 there was not much change among black Northern born young women. Half left between 16 and 17 in each year. But Southern born ones left much younger, between 10 and 11 in 1850 and 12 and 13 in 1880. By 1900, the age of leaving home for both groups had increased dramatically, to about 22 among Northern born and 17-18 among Southern born. In 1850, only 48% of 13 year old and 33% of 16 year old Southern born black women lived with their parents. By 1880 the proportions had shifted only to 49% and 31%. In 1900, by contrast, they had risen dramatically to 91% and 72%. Here the unusually high proportion of black young women in domestic service undoubtedly explains their earlier departure from home in 1850 and 1880, and the drop in the proportion in service accounts for the rise in the proportion living with their parents in 1900.

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Young people might have lived longer with their parents because they began to enter the workforce later. Indeed, without some understanding of when young people began to work it is not possible to interpret the significance of prolonged coresidence. Did it impose a strain on families, or did young people work while they lived at home and add their wages to the family income? Table 5 shows the proportion of young people from different birthplace groups at work in 1860, 1880, and 1900. The table starts with 1860 because in 1850 no occupation figures were given for people under 15 and none at all for women.

In the last half of the century young white men began to work earlier, not later. The biggest drop in the age at which they started work occurred between 1860 and 1880, with little change or a slight rise in age of entry in the next twenty years. Note, especially, the proportion of 14 year old young men at work. In 1860, only 7% of 14 year old native white males were employed compared to 51% in 1880 and 41% in 1900. In 1860, 50% were at work by age 17, in 1880 by age 14, and in 1900 at 15. In 1860 13% of the Irish born 14 year old young men were employed compared to 40% in 1880. In each year half the Northern born blacks were at work at 16; the proportion of working 14 year olds rose from 19% in 1860 to 32% in 1880. However, only 20% of 14 year old Northern born black males were at work in 1900. By contrast, the proportion of Northern black 17 year olds at work remained constant -- 17% --

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between 1880 and 1900. Among Southern born black men, 50% were at work at 14 in 1900 compared to 45% in 1860 and 41% in 1880, a pattern quite different than the one for young men born in the North. Each year about three-quarters of young men from all groups were working; by their early 20's, work was more or less universal for men.

Young men born in Germany started to work young: 92% of the 14 year olds were at work in 1860 and 100% in 1880. In 1900, native born children of German parents started work about a year earlier than native whites or native born sons of Irish parents. By and large, at some ages, there were a few less native than foreign born born children of Germans at work. By contrast, the pattern was reversed among children of Irish parents. For example, among 15 year olds in 1880, 66% of native and 82% of foreign born German children were working while 58% of native born and 45% of the Irish born children of Irish parents were employed.

Among blacks, there was also an increase in the proportion of 12 and 13 year old boys at work between 1860 and 1880. Among Northern born the proportion of 12 year olds at work rose from 7% to 16% between 1860 and 1880, and among Southern born it rose from 14% to 18%. However, between 1880 and 1900, it dropped to virtually nil. In 1880, at age 13 about 22% of both Northern and Southern born blacks were employed, a proportion about 5-6 percentage points higher than that for white males. By 1900, the proportion had been cut in half and was the lowest of any group.

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These major shifts in the proportion of young black men at work should be kept in mind when we analyse the school attendance figures in the next working paper.

These patterns show that shifts in the proportion at work did not cause the increase in the proportion of young men living at home. Quite the contrary, young men started to work earlier and leave home later. This means that there was a longer period when children lived at home after they started to work. (In 1880, 63% and in 1900, 86% of all white young men 14-17 years old living at home were employed. Figures not in table) If one compares the age at which 50% of young people no longer lived at home and the age at which 50% started work, it is possible to derive a very rough estimate of the usual range of years during which they both worked and lived at home. For native whites the period was about 2 years in 1860, 6 years in 1880, and 7 or 8 years in 1900. For the native born sons of Irish immigrants the time span was about 9 or 10 years in 1900 and for natives of German parents, 7 or 8 years. Before 1880, black young men seem to have left home at just about the same time they started to work. By 1900, both black Northern and Southern born men left about three years after they began working.

Between 1860 and 1880, the proportion of young women who worked rose dramatically in all white groups. Then, between 1880 and 1900 the proportion dropped slightly. At age 16, the proportion of employed native white women rose from 27% to 56%,

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then dipped to 51% in 1900. Among Germans, the proportions were 24%, 75%, and 64% and among Irish, 51%, 84%, and 50%. At age 21, the increase for native whites between 1850 and 1880 was from 19% to 58%, for Germans from 36% to 62%, and for Irish from 59% to 91%.

A very high proportion of young women born in Ireland worked in 1860, at least half of all those between 15 and 22, and in 1880, at least half between 14 and 25. Work for them in their early 20s was nearly universal: 91% of 21 year olds, 78% of 22 year olds, and 78% of 23 year olds were employed. This supports my hypothesis about the effect of sex ratios on female employment. The hypothesis is further supported by the contrast between Irish and German young women. After the age of 20, the proportion of German working women was only a little more than half that of the Irish. The native whites, including those of foreign origin, consistently sent fewest of their young women to work. For example, in 1880 the proportion of working 18 year old daughters of natives was 53%; it was 63% for the native and 93% for the foreign born children of Germans and 63% for the native and 81% for the foreign born daughters of Irish parents. Still, it must be remembered that the 53% of working native women was a substantial increase from the 31% twenty years earlier. By 1900, 57% of native white 18 year old women were working.

By and large, more Southern than Northern born black women worked in 1860 and 1880. In 1860, among 14 year olds, 18% of

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Northern born and 27% of Southern born women worked; among 24 year olds the figures were 59% and 71%. In 1860 and 1880 half the Northern born women were not working until age 17. Half the Southern born women were at work at 16 in 1860 and 14 in 1880. By 1900, however, half the Southern born black women were not working until 17, and, in general, black and white proportions were not very different.

Thus, employment trends reflect changes in the sex ratios. The proportion of Northern born black women at work in their mid-20's generally dropped (among 25 year olds from 61% to 53%), but the proportion of Southern born at work at the same age rose a bit, from 66% in 1860 to 68% in 1880, and then fell to 58% in 1900. This reflected the evening out of sex ratios and increasing marriage rates. The proportion of black young women who worked, nonetheless, changed less than the proportion of white women of the same ages. A final note: there was a close connection between the proportion of black women at work and the proportion who had left home. Because they worked mainly in domestic service, black young women had to leave home when they took a job.

Paul Osterman (GETTING STARTED) argued that the youth labor market began to change in the 1890's. Great technological changes, particularly the internal combustion engine, electric power, and continuous processing, fostered a massive rise in industrial output per man hour of labor while, at the same time, they reduced the demand for unskilled labor, especially the labor of young

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people. In part, the employment patterns for Philadelphia reinforce these trends. However, the patterns shown in this paper suggest that the youth labor market went through two phases in the last half of the nineteenth-century. In the early industrial period, which lasted very roughly from around 1850 to 1880, many new jobs opened for young, unskilled workers. Thus, young people started to work younger than they had before. At the same time, industrialization brought larger numbers of jobs close to working class homes, making it possible for young people to live at home during their early working years. By the end of the nineteenth-century, technological change had begun to reshape the workforce, reducing the need for unskilled, young workers. Although the process had just begun by 1900, its effects can be seen in two ways: the decline in the proportion of young people working as laborers and the modest reversal of the trend towards earlier entry into the workforce.

At the same time, a clearer stratification of the workforce into primary and secondary sectors emerged, a division only partially captured by the old distinction in job titles between laborers and skilled wage workers. The secondary sector drew heavily on young, unskilled workers. It was the sector into which youths went when they left school and started to work at 13 or 14 years old. By 1900, it had, in fact, become identified more and more with the new immigrants from Southern and Eastern Europe and with the blacks migrating into the city from the South. Indeed, it

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probably was the existence of a supply of unskilled, young labor that enabled white native born young men, including the children of immigrants, to make their way into the primary sector of the workforce, which, by and large, did not recruit members until around the age of 17. In part, the age differences in the labor force -- the concentration of 13-17 year olds in the secondary sector and in "boy labor" and dead end jobs -- reflected a characteristic of the youth labor market pointed out by Osterman. "In the first several years after leaving school young people are frequently in what might be termed a MORATORIUM period, a period in which adventure seeking, sex, and peer group activities are all more important than work. Some years later comes SETTLING DOWN, a stage characterized by a very different set of attitudes toward work." (16) When settling down occurs, work patterns become quite stable, and the transition from moratorium to settling often is signaled by a shift from the secondary to the primary labor market.

Work within the secondary sector attracted some young men for other reasons than its suitability to the moratorium period in their lives. It also suited target earners, young men from Italy, who often intended to return to Europe when they had amassed enough capital, and it suited blacks, who left domestic service in the city and, presumably, agricultural work in the South to take the new industrial jobs. (However, the general labor market shift away from as large a reliance on the labor of unskilled, very

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young men showed in the black experience, too, in the sharp drop in the proportion of employed 12-13 year olds between 1880 and 1900.) For black young men, in fact, even unskilled jobs in the secondary labor market represented an improvement, one reflected in a modest rise in prosperity within the black community. There were various indications of this: a small but growing proportion of black young men entered white collar work; the proportion of 12-13 year old boys at work decreased steeply; the proportion of black female headed households declined; black young men remained longer with their parents; they went (as the next working paper will show) to school longer; and black young women left service to stay at home with their parents. Indeed, the latter event signals an important shift in the black community. Black women throughout the period worked much more than did whites, but between 1880 and 1900 many of them left domestic service, their primary occupation. Young white women left service in these years, too. Only white young women exchanged service for industrial work. (There is no indication that the demand for domestic servants declined. Indeed, the opposite probably was true.) Black young women did not enter industrial or other work. They simply remained at home with their parents, attending school (as the next paper will show) much longer than before. Indeed, the massive increase in workforce participation which characterized the experience of white young women in these years did not mark the history of blacks, partly because at the start of the period so many of them worked already, partly because they exchanged work for school late in the century. Finally, as young people began to live at home longer, fewer boarders were available to households, and, among whites, co-resident teenage children increasingly replaced the extensions -- boarders and relatives -- that had been so common in the middle of the century. Among blacks, however, increased co-residence was not accompanied by a decline in extended households. Indeed, quite the reverse was true. The reason, certainly, must have been that the migration of blacks into the city created a need for housing to which black families responded by taking in the newcomers.

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Working Paper No. 3

School Attendance in Philadelphia, 1850-1900

Michael B. Katz
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Working Paper
Organization of Schools, Work, and Family Life in Philadelphia,
1838-1920, Project

This working paper presents an individual level analysis of school attendance in Philadelphia between 1850 and 1900. I have argued the case for the importance of school attendance as an object of historical study elsewhere. Here, I want to explicate the major patterns in the data for Philadelphia in these years. In a very general sense, the paper asks what impact the great social, demographic, and economic changes of the late nineteenth-century had on school attendance. In particular, it shows how attendance varied over time by class, sex, age, race, and ethnicity, and other factors, and it connects school attendance to the history of the transition to adulthood, outlined in the previous working paper.

By now there is enough literature on school attendance in the nineteenth-century to piece together some fairly clear hypotheses about educational patterns in Philadelphia. Aside from the work that deals directly with schooling, some of the major interpretations about social development in late nineteenth-century America also have direct implications for school-related behavior. The analysis in this paper tests these major hpotheses. It begins with a brief statement of each of them and then proceeds to a detailed exposition of the data, first through an examination of descriptive relationships between variables, then through a multivariate analysis. The analysis is based on the manuscript censuses for Philadelphia for 1850-1900. The 1850-1880 files were collected by the Philadelphia Social History Project (directed by Theodore Hershberg). The 1900 file consists of a sample taken especially for this project. In each case, school attendance is based on the question, attended school during the past year, found in the census. (In 1900 the census asked months attended school. There was so little variation in the responses that they have been collapsed into two categories, attended and did not attend.)

HYPOTHESES ABOUT SCHOOL ATTENDANCE

(1) In their analysis of school attendance and early industrialization in Hamilton, Ontario, Katz and Davey found a pattern sensitive to economic conditions and the labor market. School attendance among teenagers rose during the great depression of the late 1850's and then began to fall during early industrialization. In these years, working class youngsters left school earlier to take the industrial jobs which had become more plentiful while young people from business class families more often stayed in school, presumably as a way of preparing themselves for careers in commerce and the professions.

(2) Davey, examining the attendance of young children, found differences in the attendance of boys and girls from different classes. Working class parents were more likely than business class ones to send their young daughters (5-6 years old) to school. In general, business class families appeared somewhat reluctant to entrust their youngest children to the schools.

(3) Katz and Davey also found little class or ethnic distinction among the attendance of children 7-12 years old, among whom attendance had become almost universal.

(4) The same authors found prominent distinctions between the attendance of the native and foreign born children of immigrants. The native born were much more likely to attend school.

(5) Many scholars, for instance Lazerson and Olneck, have pointed to the high school attendance among the children of Russian Jewish immigrants and the low attendance among the children of Italians. However, recently both Miriam Cohen and Joel Perlmann have argued that the high school attendance of Russian and Jewish children reflected the occupational backgrounds of their parents. Holding class constant, they maintain, eliminates much of the difference between Jews and others, including Italians.

(6) Others, notably Timothy Smith and Stanley Lieberson, have argued that black school attendance was exceptionally high late in the nineteenth and early in the twentieth century. Several historians, in fact, have pointed to what appeared a great hunger for education among blacks after the Civil War.

(7) Theodore Hershberg and his associates have pointed out distinctions between Northern and Southern born blacks and between blacks and mulattoes on a number of different measures.

Their work highlights the internal differentiation within the black community and, by implication, suggests that school attendance among blacks will be differentiated by some of the same factors as among whites in addition to place of birth.

(8) Carl Kaestle and Maris Vinovskis have shown a striking decrease in the proportion of very young children attending school in Massachusetts after 1840. Their work points to a dramatic shift in expectations about the age at which school attendance should begin.

(9) The same authors also use an individual level analysis of census data to argue that the role of parental occupation in influencing school attendance has been overemphasized. Katz has criticized their analysis of this question on conceptual and methodological grounds.

(10) Both Joel Perlmann and Lee Soltow and Edward Stevens have argued that birth order affected school attendance, especially among older children. Families, they contend, more often sent their older children to work and their younger ones to school.

(11) David Hogan also has used ideas about family strategies to study school attendance. Southern and Eastern European families, he argues, concentrated on a strategy of social mobility which emphasized collective advancement through the accumulation of property. By contrast, Jews and Rumanians

sponsored the mobility of their children through prolonged school attendance. Thus, the former groups had high rates of property ownership and low rates of school attendance, attributes reversed among the Rumanians and Jews.

(12) Family strategies also influenced the relation between the school attendance of older children and marital fertility, according to Mark Stern. Families frequently reduced their fertility, contends Stern on the basis of data from Buffalo, New York, in 1900, in order to be able to keep their children in school longer. This strategy became especially evident in the late 19th and early 20th centuries as education, at least in the perception of many people, acquired a much closer relation to the job market.

(13) Some dual labor market theory, especially the ideas advanced by Michael Piore, also have implications for school attendance. Piore distinguishes between immigrants who remain in the secondary labor market accumulating money with which to return to Europe, on the one hand, and immigrants who have settled in America on the other. The latter were more likely to have become citizens and to have purchased property. One can extrapolate by arguing that they would be more willing to forgo the earnings of their teenage children and to let them go to school.

(14) The development of a secondary labor market in the late nineteenth-century highlights the de-skilling of many jobs, a process pointed out in a variety of recent historical studies. The reduction of skill distinctions should have been reflected in a number of measures, such as pay, mobility prospects, and family behavior. Thus, one would expect to find less difference between the school attendance of the children of men with skilled and unskilled manual occupational titles in 1900 than in 1850.

(15) Many historians have written about the founding of women's colleges in the latter part of the nineteenth-century. Much less attention has been paid to the education of young women who did not attend college. But one might expect that the desire for education represented by the founding of colleges was reflected lower down in the educational system as well and that the school attendance of teenage young women, especially those from business class families, increased.

The rest of this paper presents data with which to evaluate each of these hypotheses, and I will return to them at the end. Suffice it to say, at this point, that not all of them will fare equally well.

DESCRIPTIVE RELATIONS

In this section, I will describe the main trends in relations between school attendance and other factors as they appear in descriptive measures, for the most part contingency

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tables. However, first consider a couple of preliminary matters. Table 1 shows the numbers of sample members in each age group in each of the census years. Note the small numbers of German and Irish born children, especially after 1850. Also, note the small number of Irish and Russian born younger children in 1900 and of older native born children of Russian and Italian parents in the same year. Also, note the small size of the black sample in 1900. These small sample sizes for some groups should be remembered when considering the subsequent tables.

Table 2 deals with another preliminary issue: the interaction between variables. It was important to ask whether interactions were sufficiently strong to affect the results of the Multiple Classification Analyses, which will be described later. What the table shows for 1850-1880 (the results were so consistent that it did not seem necessary to add 1900) is that interaction effects were not a significant problem, given the division of the sample into age/sex/racial groups (that is, for example, white females age 5-6). Of 128 possible interactions in the table, only 15 were significant at .05 or less. Those that were signficant were scattered, and no pattern can be identified. These results support the use of MCA.

The first important pattern to identify is, simply, the proportion of children in school. This is shown by age/sex/racial groups in Table 3. Note, first, the general drop in the proportion of 5-6 year olds in school between 1850 and 1870. The proportion increased some between 1870 and 1880 but the figure for the latter year general stayed lower than the one for 1850, especially among the largest groups. Examples of the drop in the two deaces are the native white of native white origin (hereafter referred to as NW/NW) from 46% to 19%; the native born of German origins from 42% to 21% (hereafter referred to as G/NW); the northern born blacks of southern born parents (hereafter referred to as B/N), from 32% to 22%. The decrease continued for some groups in the next twenty years. By 1900 the NW/NW decreased frin 33% to 24% among males and from 34% to 27% for females. the native born children of Irish parents (IR/NW) and the G/NW proportions also dropped, in their cases even more steeply for girls than boys. Among B/N males there was a small decline and among Southern born black (B/S) males a larger one. However, among girls, the large drop in B/N, from 37% to 16%, contrasted with a rise from 27% to 33% among B/S, which suggests some different dynamics among black groups. Among girls in 1900, attendance was highest for those of Russian origin, 43% for those born in Russia (R/R) and 48% for native born of Russian parents (R/N). By and large, there was more ethnic variation in the school attendance of 5-6 year olds among girls than among boys, and native born children went to school somewhat less often at these ages. These patterns support the arguments of Kaestle and

Vinovskis about the decline in the school attendance of young children after 1840.

At the other end of the age spectrum, school attendance among most white male 15-16 year old groups rose between 1850 and 1860 and then dropped to either slightly above or below its earlier level by 1880. Between 1880 and 1900 attendance declined among all white male groups, with the exception of the small number of I/I. By contrast, the attendance of B/N rose throughout the period 1850-1880 while the rate for B/S rose until 1870 when it dropped, though not to its 1850 level. Between 1880 and 1900 the B/N rate rose slightly and the B/S rate declined a bit.

In 1880, the B/N attendance, 40%, was highest of any 15-16 year old male birthplace group, and it remained highest in 1900 as well. Next in 1880 was N/N, 34%. In 1900, the second highest rate of attendance was NW 26% and N/R 22%; 15-16 year olds of German origin went least often in 1880: G/N 16% compared to I/N 23% and G/G 4% compared to I/I 12%. In 1900, attendance among Italian young men of this age group was particularly low. In 1880, the group with the third highest rate of attendance was B/S with 25%. This means that the rank ordering of attendance in 1880 and 1900 was very different than it had been in 1850. In 1850 the NW/NW, with 27%, ranked highest, and B/N and B/S rates were only 14% and 6%, respectively. In relative terms, by 1880 the B/N proportion had increased almost three times and the B/S one almost four times, a tremendous change. In 1900, the B/S rate still was almost three times its 1850 level and the same as the IR/N proportion and higher than either the G/G or G/N, R/R or either Italian group.

Among women 15-16 years old, patterns were quite similar. The B/N proportion, 37%, was highest with the N/N rate, 35%, second. Among these young women the IR/N rate, 23%, was third and the B/S one, 21%, just a bit lower. Young women of German origin, both native and foreign born, still went to school less than those from other birthplace groups. In general, the trajectory of black school attendance was upward and that of white upward and then downward. Between 1880 and 1900, as whites(with the exception of G/N) declined substantially, the B/N rate dropped only from 37% to 36% although the B/S one dropped from 36% to 19%. The rate for B/N was still highest of any group. Unlike males, IT/N had a high rate of attendance, 31%, higher even than the one for R/N, 24%. Note that throughout the sample the native born children of foreign born parents usually went to school much more often than children of the same ethnic origin who had been born outside of the United States.

School attendance among 7-12 year olds was generally quite high by 1880. The lowest rate (69%) in that year occurred among B/S females. The rate among Germans, by contrast, was very high. During these years most children went to school, although there was less spread between the attendance rates in 1880 than there had been three decades earlier. Again, in these years blacks and Irish children made substantial gain. Also, the native born children of immigrants went to school more often than their foreign born ones. What is most noteworthy, and curious, about these patterns is that the attendance of 7-12 year olds in most groups declined somewhat between 1880 and 1900, when, given other trends, one would have expected it to rise. The reason for this pattern is not at all clear.

As I will point out later, 13-14 year olds are an especially interesting group. It may be that family strategies showed up most closely among these young people for whom the choice between school and work was sharpest, especially with the advent of industrial jobs. Between 1850 and 1880, the pattern among whites of this age was similar to the one for 15-16 year olds. That is, attendance either rose little or rose and then declined. In 1880, the highest rate of attendance among 13-14 year olds ocurred among NW/NW females, 71% compared to 61% for males of the same origin. Lowest was the 14% among G/G males. In 1900, the highest proportion among any male group was the 72% for R/NW, followed closely by 69% among B/N. Third was B/S, 56% with NW/NW fourth at 54%. Again, it is important to note the pattern of a substantial increase among both Northern and Southern bon black males and females. Among black young women, the attendance of B/N dropped between 1880 and 1900 from 63% to 50% while among B/S it rose from 45% to 50%. The highest rate for young women was the N/N, 58%, followed by the IR/NW 53%. Russian young women in this age group were in school much less youing men: for R/R the male-female proportions were 49% and 35% and for R/N 72% and 42%. By contrast, among both native and foreign born Italian children, more 13-14 young women than men stayed in school: for the native born the male-female proportions were 31% - 44% and for foreign born, 18% and 54%. Women of this age group stayed in school somewhat more often than men among IR/N children and somewhat less among G/N. So, birthplace groups differed in the relative emphasis they placed on the school attendance of their early adolescent children. Also, note here again the differences between the native and foreign born children of immigrants. The native born stayed in school much longer. For instance, among children of German origin, the proportions for males were 0 and 45%, for Italians, 31% and 44%, and for Russians, 49% and 72%. There were similar differences among young women, too.

Thus, the major trends in the relation between school attendance and age, sex, race, and birthplace were: the rise and decline of school attendance among older white groups; the drop in the attendance of young children; the decline in the attendance of 7-12 year olds between 1880 and 1900; the general similarity between male and female patterns before 1900 and the birthplace differences in the attendance of older young men and women in the later year; the low attendance of teenage children of German origin; the higher attendance of native than of foreign born groups, regardless of parents' birthplace; and the tremendous rise in black school attendance.

Aside from birthplace, the length of time immigrant parents had been in the United States and their citizenship status may have been important influences on the school attendance of their children. Immigrants who had been here longer might have had more opportunity to find steady work that would make it possible for them to forgo the earnings of their children for a few extra years. At the same time, as Michael Piore has argued, many immigrants came to the United States intending to return to Europe. They remained in secondary labor market jobs, trying to accumulate enough money to finance their return. As target earners, they may have been especially reluctant to send their children to school once they could contribute to the family income. However, when immigrants decided to remain in the United States, they may have shifted their goals and decided to promote the mobility of their children by allowing them to stay in school longer. Piore suggests that taking out citizenship can serve as a rough proxy for intent to settle in the United States.

The effect of citizenship and length of residence in the United States can be tested only in 1900. (Table 3A) The table shows, first, that citizenship by itself had a small but noticeable impact on attendance in some instances, especially among 13-14 year old girls and 15-16 year old boys. Among the former, 57% of the foreign born children of citizens were in school compared to 47% of the children of non-citizens. Among 15-16 year old young men, the proportions were 25% and 17%. It could be that these figures are merely a function of length of residence. In fact, those people in the United States less than five years were least likely to send their children to school. Even among the 7-12 year olds there were notable distinctions, 61% of the boys whose parents had been in the United States less than five years attended compared to 75% of those whose parents had been there 5-9 years; for 15-16 year old young women, the figures were 0 and 16%.

The relation between attendance, citizenship, and length of residence is clearer from looking at the variables considered together, as in the last part of Table 3C. Here it is clear that the real distinction between the children of citizens and non-citizens occurred among those whose parents had been in the United States either 5-9 years or 10-19 years. Those here less than five years had by and large not had the opportunity to become citizens. Those here 20 or more years had really settled, whether or not they had formally acquired citizenship (as most of them had). Among 13-14 year old young men whose fathers had been in the United States 10-19 years, 73% of the children of citizens attended school compared to 53% of the children of non-citizens. For 15-16 year old young men of the same background, the proportions were 20% and 8%. These differences were consistent across the age and sex groups of teenagers, with the exception of 15-16 year old females, among whom the pattern was reversed for reasons which are not at all clear at this point. Thus, the data generally are consistent with Piore's argument about the relation of immigration, settlement, and citizenship. And they do point to the possibility of different family strategies within immigrant working-class families.

It is possible that some of the variation in school attendance, even among immigrant groups, reflected property ownership. People with property, it might be thought, would be more likely to send their children to school. Real property values are available only in 1850, 1860, and 1870. There are no property figures in 1880. In 1900, the census records whether individuals owned their own homes and whether or not they had a mortgage.

Among 5-6 year old males, attendance increased with property ownership in both 1850 and 1870: 40% of those whose families had no property and 53% of those whose families had property worth at least $1000 in 1850 attended school. The comparable proportions twenty years later were 23% and 33%. Note the drop in the proportion among both groups. For girls, there were no real differences in attendance by property. So the dynamics of the relation between attendance and property seem to have varied by sex. The proportion of young girls attending school among people with and without property was much the same as the rate for young boys whose families had no property in both 1850 and 1870. This means that wealthier people sent their younger sons to school more often than their daughters. In 1900, property owners, whether or not they had mortgages, sent more of their 5-6 year olds to school than did people without property. Among young women, there were distinctions only between the children of those who owned their property without mortgages and others. Still, observe, that no group sent more than about a third of its 5-6 year old children to school.

In 1850 people with property sent more of their 7-12 year olds to school, but this distinction disappeared in the next two decades. In 1900, parents who owned their homes without mortgages sent somewhat more of their 7-12 year olds to school, but the differences were not large.

Property made the most difference among 13-14 and 15-16 year olds. Teenagers from families with property more often went to school. Among 15-16 year old males, for example, in 1870 23% and 33%, respectively, of those with no property and those whose parents had at least $1,000 worth of property attended school.

For young women, the same proportions were 21% and 32%. However, the spread between groups was smaller in 1870 than in 1850. In 1850, the proportion among those whose families had at least $1,000 worth of property was about 3 times larger than among those with no property for males and 2 times for females. In 1870, the differences for both sexes were about 1 1/2 times. In 1900, those with no property were by far the least likely to have either sons or daughters, 13-14 or 15-16 years old, in school. With the exception of 15-16 year old males, those whose parents owned their property without a mortgage were the most likely to be in school. For example, among 13-14 year old males, 47% of those whose parents had no property, 67% of those with a mortgage, and 76% of those who owned property without any mortgage attended school. Among 15-16 year old females, the same three proportions were 14%, 36%, and 42%.

Table 5 shows the relations between attendance and birthplace groups for children whose parents owned at least $1,000 worth of property. Despite some minor variations, the table makes two major points. First, wealthy parents were much less likely to send either their 5-6 year old sons or daughters to school in 1850 than in 1870. Second, when property ownership is controlled, the ethnic distinctions in school attendance among white groups decrease quite notably, with the exception of the

Germans among whom the low school attendance of teenagers remains notable.

Some historians -- notably Joel Perlmann and Lee Soltow and Edward Stevens -- have argued that birth order affected school attendance. Again, the question is one of family strategy. Did families sponsor the mobility of some of their children through education? Were older children sent to work to make it possible for younger children to remain in school? The general relations between birth order and attendance among whites are summarized in Table 6. Unfortunately, the data for 1850-1880 are questionable because they represent only children living at home. By contrast, the 1900 data are based on children ever born and so are much more reliable.

At first glance there are few, if any, relations between birth order and school attendance. In fact, the only pattern that emerges consistenly is the lower attendance of "nonchildren" among teenagers. That is, children living with adults who were not their parents were less likely to go to school after age 13. This is hardly surprising since many of these children had left their parents' homes in order to find work.

To examine the effect of birth order in 1900 more closely, I turned to the group means. Because middle child is not a precise category and because I was interested in patterns when families had more than one child, I considered only the contrast between

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youngest and eldest children. Here there is an interesting and consistent pattern, which appears when cohorts are broken down by race, birthplace group, occupation, or property. It is that among 13-14 year olds, especially males, younger children were sent to school more often than older ones. This pattern did not hold for 15-16 year olds. These results are shown in Table 6A. For example, among white 13-14 year old males, 60% of youngest and 49% of eldest children attended school; for black males of the same age the proportions were 60% and 56%. Breaking down the cohort another way, and considering whites only, 77% of the 13-14 year old young men who were the youngest in their families and whose fathers were professionals or proprietors attended school compared to 46% of children who were the eldest in their families. For unskilled workers the proportions were 59% and 29%. Even within property-groups the distinctions held: 53% of 13-14 year old sons of fathers with no property attended school compared to 45% of those who were the eldest in their families. Among the 13-14 year old native born daughters of native parents, 71% of the youngest and 57% of the eldest attended school. For native born daughters of Irish origin the proportions were 55% and 45%. Clearly, the age range 13-14 years old was a crucial point of transition for young people. It was an age when many families made decisions about whether their sons and daughters should stay a year or two longer in school. Children 13-14 years old who were the youngest in their families had older siblings who probably were working, because so few youngsters stayed in school past the age of 15 or 16. By contrast 13-14 year old eldest children did not have brothers or sisters old enough to enter the labor force if their families needed extra income. This means that the years around 13-14 were the point at which tradeoffs between extra family income, the future of younger children in a family, and individual social mobility had to be made.

It is, of course, to be expected that parental occupation would exert an influence on school attendance. However, that influence was not always in the same direction. (Table 7) That is, among all groups higher ranking occupations did not promote higher proportions attending school. Among 5-6 year olds the largest drop in school attendance occured among the children of professionals and proprietors between 1850 and 1880 (from 49% to 39%, with the lowest point, 22%, in 1870). Other groups rebounded more after 1870 so that their proportions in 1880 were closer to those in 1850. Throughout the period women household heads sent a relatively constant proportion of their young sons. By 1880, in fact, there was little occupational difference in the attendance of young boys. For girls patterns were quite similar, except that women sent fewer of their daughters than sons at this age. Again, by 1880 there was little occupational differentiation. Between

1880 and 1900, there was another drop in the attendance of business class sons. Business class families generally sent more of their young sons than daughters to school; working class families, by contrast, more often usually sent a higher proportion of their young daughters.

There was, as might be expected, little occupational difference in the school attendance of 7-12 year olds. However, among 13-14 year olds there was a fairly sharp occupational difference in each year. Business class youngesters attended more often. Indeed, note the difference between masters and manufacturers, on the one hand, and skilled wage workers on the other. In 1880, the proportion among sons of masters and manufacturers was 70% compared to 51% for skilled workers' sons. For daughters, the two proportions were 67% and 48%. Among males the children of the unskilled went least often (37%) and the sons of widows almost as infrequently (38%). Among young women, a higher proportion (46%) of widows' daughters attended, but attendance was higher among the skilled than among the semi or unskilled. In contast to other groups, rates for the children of business employees were rising: for males, from 58% to 69% and for females from 38% to 72%. (These parents, of course, were probably the ones leading the fertility decline.) By 1900, the proportion of male school attendance among 13-14 year old professional and proprietor sons increased to its 1850 level, and the attendance of business employee children also increased some. Both remained the highest of any other groups, aided by a decline in the attendance of master and manufacturer sons. Within the working-class, the increase was sharp: from 51% to 54% for sons of skilled workers and from 37% to 50% for sons of unskilled ones. Among young women, real differences in school attendance separated the daughters of the business class and the working class. Among them, daughters of masters attended (84%) most frequently of any group.

To some extent patterns for 15-16 year olds followed those for 13-14 year olds. The class differential, including the distinction between masters and manufacturers and skilled workers was clear. So was the rise and then fall in the proportion attending. Among masters and manufactures and skilled workers more young men than women attended school in 1880. In other groups, young women went more often. For example, 32% of the daughters of professionals and proprietors were in school in 1880 compared to 27% of the sons; for business employees, the proportions were 36% of of the daughters and 23% of the sons. Children from female headed families generally just did not attend very much at all. Nor in 1880 were the attendance rates for business employees' children particularly notable. Perhaps business employees could find suitable work for their children when they turned about 15. In 1900, the distinction between business class and working class youngsters was sharp. Attendance rose among all business class groups between 1880 and 1900; working-class groups remained nearly the same. As a result, in 1900 the proportion of children from different occupational backgrounds attending school was, professional and proprietor 35%, master and manufacturer 51%, skilled worker 16% and unskilled worker 12%. The same sort of distinctions occurred among young women of different occupational backgrounds, too.

What is also important about this pattern is that the gap between skilled and unskilled workers began to widen during the early years of industrialization and then to close later in the century. In 1860, for instance, 23% of the 15-16 year old sons of skilled workers attended school compared to 12% of the sons of unskilled workers. In 1880 the two proportions were 15% and 17%, respectively, and in 1900, 16% and 12%. Among young women from the same origins, the gap between groups dropped from between 20% and 12% in 1860 to between 14% and 16% in 1880 and between 15% and 16% in 1900. Very simply, with industrialization, as the literature on the secondary labor market and deskilling would predict, the distinctions between skilled and unskilled labor began to diminish and their behaviors became more alike.

Some occupational distinctions in school attendance become clearer from a closer look at figures within particular groups. Consider, first, the school attendance of the children of professionals and proprietors born in different places. (Table 8) Among 5-6 year olds, NW/NW were the least likely to go to school in each year. The attendance among all groups declined, but distinctions between them nonetheless remained. By 1880, 27% of NW/NW attended compared to 44% of NW/GER and 42% of NW/IR. Except for 1850 when the NW/GER proportion was lower, patterns among among young girls were the same. So the question remains; why natives and relatively affluent people were the least likely to send their young children, particularly their daughters, to school? Among 7-12 year olds, there were few differences. However, among 13-14 yeaar olds, NW/NW sons were the most likely to be sent to school, though the distinctions between groups were not dramatic. In 1850, 76% of NW/NW attended compared to 70% of NW/G and 71% of NW/I. In 1880 the respective proportions were 75%, 57%, and 67%. Again, observe the relatively early school leaving among the Germans. Female NW/NW led only in 1850. NW/G were higher in 1860 and 1870, but by 1880 the IR/NW (93%) were highest with the NW/NW (83%) next. The rise among both of the latter two groups had been very large. What these figures mean, is that except for the GER/NW, 13-14 year old daughters of professionals and proprietors were going to school more during these years. Similar trends were noticeable among 15-16 year olds. For males, NW/NW had a substantial lead. Indeed, their proportion rose from 1850-1880, contrary to the overall trend, from 44% to 60%. The IR/NW proprotion also had increased from 17% to 26% while the GER/NW one had dropped from 36% to 14%. Among young women in 1880, NW/NW and GER/NW went to school less often than men whereas among IR/NW young women went more often than men, 48% compared to 26%. Among young women the NW/NW lead was not as pronounced as among men.

The distinctions between the children of skilled workers born in different places were not great. (Table 9) Among 5-6 year old boys, the proportion of native-born children attending was almost identical in 1850 and the proportion of foreign-born somewhat lower. Rates for all groups dropped through 1870. By 1880, the rate among the NW/NW was lowest with the G/NW and IR/NW nearly back to their 1850 level. Patterns among young girls were quite similar, except that the IR/IR had the highest proportion of attendance in 1850. By 1880, rates had dropped and there was little difference between groups. Among NW/NW, girls went more than boys; among other groups boys went more often. Although foreign-born children attended least often among the 7-12 year olds, differences between birthplace groups were really quite small. For 13-14 year olds differences also were small. The major difference was the low attendance of children of German origin. Among IR/NW, G/G, and IR/IR, young women went to school more than among young men. In 1850, more young male NW/NW than female attended, but this pattern was reversed twenty years later. In that year substantially fewer Irish young women than men 13-14 years old attended school. Among Germans the sexes attended at about the same rate. NW/NW young men led in school attendance among 15-16 year old children of skilled workers in 1860 but again lost their lead by 1880. Indeed, the drop among them was large: from 24% to 9%. Other groups changed less. As a result, the 1880 proportions for G/NW and IR/NW, 17% and 19%, were higher than the NW/NW one. Among young women, again fewer NW/NW daughters than sons attended school in 1850 (18% to 24%), a pattern reversed 30 years later when 23% of the daughters and 9% of the sons were in school. Trends among daughters who were G/NW and IR/NW also reversed themselves. Here the proportion attending school dropped substantially, from 17% to 6% and from 22% to 9%, and ended up much lower than the proportions for men. Do these figures relfect an increasing number of jobs available to the daughters of skilled workers?

With the 5-6 year old children of unskilled workers (Table 10), trends for NW/NW and IR/NW went in opposite directions between 1850 and 1880. The former dropped and the latter rose, though it continued to lag behind the NW/NW rate. There was even less birthplace related difference among girls than among boys of this age. Nor was there much distinction between birthplace groups among 7-12 year olds. However, among the 13-14 year olds there was a large native/foreign distinction in 1850. The proportions for foreign born children were less than half as high as those for native born groups. Between 1850 and 1880, nonetheless, the proportion of native children of unskilled workers attending school declined and the proportion of foreign born attending rose. The decline was large, for NW/NW from 50% to 38%, for G/NW fro 67% to 13%, and for IR/NW from 52% to 41%. Within the native born groups, young women had a lower rate of attendance than men in 1850. What stands out, though, is, again, the low German rate and the declining lead of the natives. What accounts for the high Irish rate? Were some Irish youngsters turning to the schools because they were having trouble finding work? As might be expected, in 1850 few 15-16 year old children of unskilled workers of any birthplace group attended school. The highest proportion was among the G/NW, 38%; for NW/NW males it was only 13%. In 1880, no G/NW young men of this age attended school. Proportions were low, too, among daughters of unskilled workers. By 1880, in fact, there were almost no 15-16 year old daughters of unskilled workers in school, and even among native whites few males attended.

In 1900 (Table 10A), the small numbers in the sample make it difficult to draw conclusions about the relation of occupation, birthplace, and school attendance. The major point in the table is the lack of a clear and consistent distinction between skilled and unskilled workers. There was something of a hierarchy notable among NW/NW, although here, too, the differences were small. The major gap separated business class children from the working class. For example, among 13-14 year old NW/NW young men, the proportion attending school by occuptional rank was, 86% for sons of professionals and proprietors, 46% for skilled workers, and 43% for unskilled workers. Among 15-16 year olds the same three percentages were 42%, 20%, and 23%. So, here the diminishing distinction between skilled and unskilled workers once again is apparent.

One other way to probe the relation between wealth and school attendance is to examine the influence of servant employment. This measure is especially helpful in 1880 when no property data are available. For 5-6 year olds there was little difference in attendance by servant status. Among 7-12 year olds, the only group to stand out were girls from families with two or more servants, who were somewhat more likely to be in school. However, among 13-14 year olds, those young men whose parents employed any number of servants were considerably more likely to attend school. Attendance, that is, was 50% for young men with no servants in their families, 32% for those with one, and 86% for those with two or more. Among females, those from one servant families were the most likely to attend school. The same pattern of increasing attendance with servant employment is apparent among 15-16 year olds. The proportions attending school from

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families with 0, 1, and 2+ servants were 19%, 47%, and 73% for males and 17%, 26%, and 56% for females. Note that among those whose families employed servants, young men went to school more often than young women. Thus, servant employment shows the effect of family wealth on the school attendance of teenagers in 1880.

Among black families, a variety of social and demographic factors affected school attendance, too. One of these, as I observed already, was whether children had been born in the North or the South. Another, which had no notable impact at any time among white families, was illiteracy. In 1850 illiterate blacks sent more of their children to school at all ages than did literate ones. (Table 12) For example, among 5-6 year old Northern born males, 36% with literate and 54% with illiterate parents attended school; among 13-14 year old Southern born females the proportions were 41% and 57%; and among 15-16 year olds of the same background, 9% and 20%. After 1860, literate parents generally sent a higher propoprtion of children, but the differences between literate and illiterate parents were small. By 1880, however, the lead of northern born children of literates was generally clear. In that year 70% of the 13-14 year old daughters of literate black parents attended schol. It is important to note, however, that -- in direct contrast to whites -- the proportion of teenage children from both literate and illiterate parents attending school increased markedly between 1850 and 1880; for 15-16 year old Northern born sons of literates it rose from 14% to 35% and for daughters from 14% to 41%. For the Southern born children of illiterates the rise for males was from 8% to 21% and for females from 20% to 31%.

Birth order did not affect the school attendance of black children very much after the age of 6. However, 5-6 year old children who were the youngest in their families were, by and large, the most likely to attend school. For instance, in 1870, among boys 5-6 years old, 8% of eldest sons attended compared to 26% of middle sons and 20% of youngest ones went to school. For girls of the same ages, the three proportions were 14%, 19%, and 30%. By 1900, as noted already, among 13-14 year olds, black youngest children, like whites, were more likely than those of the same age who were the eldest in their families to attend school.

What did effect school attendance notably among blacks was property ownership. Not many blacks owned property, but the children of those that did, especially when the property was worth at least $1,000.00, were very likely to attend school. Among 5-6 year old males, those children whose parents owned at least $1,000.00 of property went to school most often in each year, although their level of attendance dropped precipitously between 1850 and 1870. (Table 14) In 1870, however, families with at least $1,000.00 of property sent fewer of their young daughters to school than did families with no property. Again there is the lurking distrust of early schooling for girls among propertied families. Among children 13-14 years old, those whose parents owned at least $1,000.00 worth of property always went most often to school. Indeed, some of the rates were extraordinary. For instance, in 1860 95% and in 1870 90% of the daughters from these propertied families attended school. These rates were higher than those for men whose parents had a similar amount of property. Property also strongly influenced attendance among 15-16 year olds. Again, more young women than men from families with at least $1,000.00 worth of property attended school. In contrast to white groups, the rise in attendance across the decades was especially noteworthy, even for children from families without property. The proportion of men 15-16 years old attending school whose families owned no property increased from 11% to 28% to 37% between 1850 and 1870. For those whose parents owned at least $1,000.00 worth, the proportion went from 50% to 41% to 57%. For women of the same age, the proportion among those who lacked property rose from 12% to 18% to 29% and for those who parents had substantial property, from 40% to 53% to an amazing 75% in 1880. In 1900 the numbers are very small and make conclusions difficult. In general, however, it is clear that property ownership remained very influential.

The other major measure of social differentiation among blacks -- parents' occupation -- also affected school attendance. (Table 15) Here, however, the small numbers of black parents in professional and commercial occupations make trends difficult to assess reliably. Among 5-6 year olds, higher ranking parents sent more of their sons, but not their daughters, than other groups. For instance, in 1880, the proportion of boys attending was, for sons of professionals and proprietors, 47%, for those of skilled workers 23% and for sons of unskilled workers 35%. Stratification had a more notable impact among older children, both male and female. For example, among 15-16 year old males in 1850, the proportions attending school were, for the sons of professionals and proprietors, 33%, for those of skilled workers 15%, and of unskilled, 18%. Among females the same three proportions were 36%, 30%, and 18%. In 1880, a striking 92% of 15-16 year old sons of black professionals and proprietors attended school compared to 29% of the sons of skilled workers and 18% of those of unskilled workers. Among young women, the same proportions were 65%, 34%, and 35%. Note, thus, that in working class families more teenage black daughters than sons usually attended school. Among business class black families, by contrast, more sons than daughters attended at these ages. For both sons and daughters, though, it is important to stress the great rise in attendance of teenage age children of professionals and proprietors between 1850 and 1880 (from 33% to 92% for males and from 36% to 65% for females). The few parents who were business employees also usually sent a high proportion, indeed in some years all, of their children to school. Even the sons and daughters of wage workers went to school more often in 1880 than in 1850. Among 13-14 year old male children of unskilled workers, for instance, the increase was from 38% to 51% and among females from 48% to 59%. Even the children of female household heads, who more than anyone else usually needed the income from their working teenagers, also began to go to school more often; among males the proportion attending rose from from 6% to 30% and among females from 9% to 30%.

In 1900, the small sample makes occupational differences even more difficult to assess. Where there are sufficient cases, it is clear that professionals and proprietors continued to send more of their children to school. For example, among 13-14 year olds, 100% of the sons of professionals and proprietors and 50% of those of skilled workers attended school. In most instances, skilled workers sent more of their children to school than the unskilled. For example, among 15-16 year olds, 50% of the sons of skilled workers and 31% of those of unskilled attended; among 13-14 year olds, 83% of the daughters of the skilled and 59% of the unskilled attended. Two points are noteworthy about these figures. First, they are higher than comparable proportions among white working class children. In 1900, 16% of the 15-16 year old sons of skilled white workers attended school compared to 50% of the sons of black skilled workers; 12% of the sons of white unskilled workers attended compared to 31% of the sons of blacks. For young women, the same differences between blacks and whites existed. Among 13-14 year olds, for example, 47% of the daughters of skilled white workers and 83% of those of blacks attended as did 41% of the daughters of white unskilled workers and 59% of the daughters of blacks. The comparisons of attendance between white and black working class families make the black achievement all the more outstanding. Second, the differences between skilled

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and unskilled were greater in 1900 than in 1880. This is in direct contrast to the situation among white children where the differences between skilled and unskilled workers lessened during these years. Clearly, the different labor market positions of white and black workers were reflected in attendance patterns among their children. For whites between 1850 and 1900 and for blacks between 1850 and 1880 it will be possible to sort out the relative effects of the variables used in this descriptive analysis of attendance patterns by using multivariate statistics. Unfortunately, the numbers in the 1900 sample are too small, especially when broken down by categories within variables, to make a multivariate analysis possible for the blacks in that year. However, it is clear that there were three main forces promoting black attendance at the turn of the century: Northern birth, property ownership, and a professional or commercial occupation. Those black families with any of these characteristics were especially likely to send their children, especially their older ones, to school. If there were sufficient cases, the data undoubtedly would show that those families who ranked highly on all three measures were the most likely to have children over the age of 13 or 14 in school. However, the most important story may not be the impact of social differentiation within the black community, for that is to be expected, but, rather, the increasing attendance among the great bulk of black children whose parents were propertyless members of the working class. It is the way in which their attendance outstripped that of white working class youngsters that is the most remarkable feature of this analysis.

MULTIVARIATE ANALYSIS

In order to test the influence of each of the variables discussed in the preceding section, I did a series of Multiple Classification Analyses for each census year between 1850 and 1900 for whites and blacks separately. Within each year I partitioned the file by age and sex. (males 5-6, females 5-6, males 7-12, females 7-12, males 13-14, females 13-14, males 15-16, females 15-16) Here I will not report on the black results for 1900 because, as just noted, the cell sizes were too small to make the analysis meaningful. In each analysis the dependent variable was attended school during the year (yes/no). The independent variables were parental occupation; birthplace of father and child; property ownership (except in 1880); birth order; and parental literacy. (I did separate analyses for young people who were children of the families with whom they lived and for the entire group. In the latter case, a household status variable -- child/non-child -- replaced the birth order variable.) In 1900, I did separate analyses for children of foreign-born parents to test the impact of citizenship, length of residence, and property. In all the analyses the co-variates were total number of children; total relatives, boarders, and servants; and exact age of child.

Consider, first, the summary statistics. (Table 16) The grand means are based only on young people living with their parents. They show the same trends as the descriptive statistics, including the drop in the attendance of young children, the rising and falling rate among white teenagers, and the black increase. In most cases, note, the main effects and co-variates were significant. The proportion of variance explained was lowest among 7-12 year olds because most of them went to school It was highest, .23, among black 15-16 year old males. Remember that the file had been partitioned for some of the major sources of variation -- age, sex, and race -- before the analyses began. This, of course, had the effect of lowering the proportion of variance accounted for by the MCAs. From the betas, it appears that after 1850 among blacks the occupations of parents were more influential than region of birth for children of all ages. In fact, the distinction increased over time. For example, for 15-16 year old males in 1850 the betas for birthplace and occupation were .22 and .21; in 1880 they were .08 and .32, respectively. Among whites, the differences in betas between occupation and birthplace were not consistent and both stayed relatively high. Among whites, too, the beta for property was not especially high until 1900 when it became comparable in influence to birthplace and occupation. Among blacks, property ownerhsip was most influential among 13-14 and 15-16 year olds, and its influence increased between 1850 and 1870. For example, among 13-14 year old blacks, it rose for young women from .09 to .28 and for young

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men from .16 to .25. There were no consistent patterns to the betas for birth order or literacy. Household status became an important factor among black males age 13-14 in each year and among other teenagers after 1850. Among the co-variates, age was, of course, consistently important. However, the variable which was a proxy for household complexity, total relatives, boarders, and servants, was of no influence. The analysis that follows summarizes trends shown by the adjusted deviations for each variable. The proportions cited are the sum of the adjusted deviation plus the grand mean. They are, thus, predicted probabilities of school attendance with other factors controlled. They are, therefore, estimates rather than actual proportions.

Occupation, it is clear, exerted a major influence throughout the period. (Table 17) Observe, first, the general decline in the proportion of 5-6 year olds attending. It appears that the nadir was 1870. Why was that so? Within the overall decrease among white families, working-class parents sent more young children than did the business class in 1880. This was a reversal of the pattern 30 years earler. In 1850 the group which sent the highest proportion of boys was the Professionals and Proprietors, 48%; in 1880 it was skilled workers, 49%. But by 1900, the business class by and large again sent young boys most often. Indeed, the attendance of working class boys declined notably between 1880 and 1900, from 49% to 28% among skilled workers' sons and from 40% to 26% among the sons of unskilled workers. For girls there was little occupational distinction

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until 1880. In that year, working class parents clearly sent the highest proportions of 5-6 year old girls, and, with the exception of semi-skilled workers, that pattern continued for the next two decades. Female headed families sent a fairly average proportion of their 5-6 year olds to school in each year.

Among 7-12 year olds occupation made very little difference for whites in any year, though in 1880 the children of unskilled workers were a bit behind. For blacks there was no occupational distinction among children of this age.

The occupational patterns among 13-14 year old males and females, however, were quite different. Among males there were consistent class distinctions. Between 1850 and 1880 there was a small rise in 2 of the 3 business class groups and a drop in working-class groups and among female headed households. In most cases, all business class groups sent a higher proportion of their sons to school than did working-class families. The distinction between Masters and Manufacturers, on the one hand, and Skilled Workers, on the other, is particularly noteworthy here, 78% compared to 56% in 1880. By 1880 unskilled workers sent the fewest children of this age to school. Between 1880 and 1900 the school attendance of white 13-14 year olds from all occupational backgrounds, except from unskilled workers' families, dropped. In 1900 it was highest among business employees (70% compared to 60% for Professionals and Proprietors). Despite the decrease, the business class still remained ahead of the working class. Within the working class, the proportion of skilled workers' sons attending school dropped a tiny bit from 51% to 50% while the proportion of unskilled workers' sons rose notably from 37% to 54%. Note here, as observed with descriptive statistics, the decline in the distinction between skilled and unskilled workers' children.

Among 13-14 year old young women there were few distinct occupational patterns before 1880. In that year young women went to school more often than young men from families with the same occupational rank. In most cases, this was a reversal of the pattern that had existed 30 years earlier. Young women from female headed households, even, went to school much more often than did young men from the same type of families, and the proportion of young women in school did not drop as much over time as did the proportion of young men. Between 1880 and 1900, the proportion of daughters of Professionals and Proprietors and Business Employees had decreased some and that of Masters and Manufacturers rose a little. In all, the business class remained ahead of the working class. As with males, the proportion of daughters of skilled workers attending dropped between 1880 and 1900 while the proportion from unskilled workers' families rose. Thus, among young women, too, the distinctions between children from skilled and unskilled families diminished.

Among black young men 13-14 years old, occupational distinctions in attendance emerged between 1860 and 1870. Between 1850 and 1880, though, the general trend among them was upward even though by 1880 in some instances attendance had dropped a bit from its peak. In 1880, the the proportion attending school among sons of black Professionals and Proprietors was 75%, Skilled Workers 71% and Unskilled Workers 50%. For black young women, occupational distinctions emerged consistently only between 1870 and 1880. Then 96% of the daughters of Professionals and Proprietors and about 75% of those from Business Employees, Masters and Manufacturers, and Skilled Workers and 62% and 69% of children of Unskilled Workers and Female Household heads, respectively~~, attended. Note that~~ throughout the period blacks usually had higher proportions attending than whites within the same categories, but the distinction was greatest in 1880. For example, among sons of Professionals and Proprietors, the black male proportion was 75% and the white proportion 69%; among Unskilled Workers' it was 50% for blacks and 37% for whites. For young women, the proportion of Skilled Workers children attending was 76% for blacks and 59% for whites. Even among female headed households the distinction remained: blacks 69% and whites 56%.

Patterns among 15-16 year olds were similar to those among the 13-14 year olds. The black/white contrast emerged between 1860 and 1870. Before 1870, the proportion of black 15-16 year olds attending school was usually similar to or below that of whites from the same occupational background. Afterwards it was higher. In 1880, among the sons of Professionals and Proprietors, the proportion of blacks attending was 91% compard to 36% for whites; for skilled workers' sons the black proportion was 36% and the white 34%, for unskilled workers', 27% and 22%, respectively, and for female headed households, 29% for blacks and 16% for whites. Among females there were similar patterns, for example, 76% for daughters of black Professionals and Proprietors and 43% for daughters of whites; 34% for unskilled black workers' daughters and 16% for whites.

Among 15-16 year old males, there were clear class distinctions in attendance. Note the drop among white males from 50% in 1850 to 36% in 1880, the largest of any group. Those who had the highest proportion in 1880 were sons of Masters and Manufacturers (48%), and lowest were sons of female household heads (16%). As with the younger group of men, attendance was higher among business class than among working class young men. (See again the sharp distinction between Masters and Manufacturers, 55%, and Skilled Workers, 20%, in 1900). In fact, in these 50 years attendance among all working class groups went down, but skilled workers' sons declined the most, from 34% to 20%, compared to a drop of 22% to 17% among Unskilled Workers' sons. So, once again, the blurring of the distinction between skilled and unskilled workers is apparent. Among daughters, attendance dropped within every group except the unskilled. The attendance of Unskilled Workers' daughters rose from 16% to 31% in contrast to the pattern among the daughters of Skilled Workers, whose attendance dropped from 23% to 18%.

The relations between age, sex, and occupation were complex. In general, teenage young men went to school more often than young women in 1850. By 1880 this pattern had been reversed.

However, within the next two decades the older pattern had begun to reassert itself and within most occupational groups young men were slightly more often in school than young women from the same occupational background.

Among blacks, the major story is the rise between 1850 and 1880 for 15-16 year old children from most occupational backgrounds. Distinctions became most apparent in 1880 when the proportions for children of Professionals and Proprietors leaped ahead to 91% for males compared to 36% for skilled workers. For young women the same proportions were 76% and 36%. Thus, among blacks occupational background was even more important for 15-16 year olds than for 13-14 year olds.

The influence of birthplace on attendance also was complex. Among 5-6 year olds in 1850, all native born boys, black and white, attended school more often than any foreign born group. These substantial differences largely had disappeared 30 years later. Between 1880 and 1900 the decline continued. Within these 50 years the proportion of NW/NW boys of this age attending school dropped from 47% to 25%. Highest, interestingly, in 1900 were the native born children of Italian parents, 45%. The NW/NW proportion also dropped steeply for girls. Indeed, both black and white native born girls went to school less often in 1880 than in 1850 at these ages. The decline continued during the next two deacades. It was, in fact, the newer immigrants, the Italians and the Russians, who sent the most 5-6 year old girls to school.

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Among 7-12 year olds, of course, differences were much lower. The ones that were pronounced in 1850, the relatively low school attendance of foreign born children of Irish and German parents, largely had dwindled by 1880. By 1900, the proportions among most groups, as observed earlier, had declined.

For 13-14 year olds the first notable trend is the decline in the proportion of children of German origin -- both native and foreign born -- attending. At the same time the proportion of attendance among the children of Irish origin -- also of native and foreign birth -- increased between 1850 and 1880. The result was that the relative position of the Irish and Germans were reversed during this 30 year period. Among the NW/NW the decrease was smaller as it was among blacks. Indeed, the B/N proportion stayed the same. Between 1880 and 1900 the NW/NW proportion dropped again as did, now, the IR/NW one. Only the German proportion rose, although it still remained lowest among the older groups. The group sending fewest of its 13-14 year olds in 1900 was the Italians: 40% of IT/IT young men attended.

In 1850, distinctions in attendance between foreign and native born children were sharp. By 1880, the distinction had diminished and was replaced by the low school attendance of German origins. By 1900, however, the distinction had reemerged between the foreign and native born children of Italians and Russians. Among Italians, the proportion attending school was 40% of foreign born and 49% of native born. For Russians the two proportions were 55% and 72%. Note, however, that the proportion

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for foreign born Russians was still higher than for native born Italians. Among IR/NW females went to school more in both 1850 and 1880, as they did among Germans (although among the latter there was less distinction between young men and women). What is noteworthy in the case of NW/NW is that female and male trends went in opposite directions: the proportion of males attending decreased between 1850 and 1880; the proportion of females attending rose. Between 1880 and 1900, however, the proportion of females attending dropped notably among the older groups, among NW/NW, for instance, from 69% to 59%. By 1900, only among NW/NW were 13-14 year old females more likely than males to be in school. The most dramatically opposite case was among the Russians, who sent a much higher proportion of their sons than daughters to school.

Among blacks, male and female 13-14 year olds reversed postitions between 1850 and 1880. In 1850, males went to school more often; in 1880 females usually did. In fact, the increase in the proportion of black females attending school was very large in these years. Among black males, the sharpest drop was among the Southern born sons of southerners, whose proportion dipped from 87% to 65% in contrast to young women of the same background among whom the proportion rose from 56% to 70%. The only other group with a proportion of 70% in 1880 was the IR/NW females. Blacks had the highest scores among male 13-14 year olds in 1850 and 1880, too.

Again, with 15-16 year olds, the native-born foreign-born distinctions show strongly in 1850 with blacks more like the native whites. The highest proportion in that year was 31% for NW/NW. Next came blacks. By 1880, again, there was a large drop among the Germans. Young people of Irish origin had about the same proportion or had increased a little. The NW/NW group had risen some and then fallen back a little. The most noteworthy increase was among the blacks, BS/S from 27% to 35%; BS/N from 27% to 39% and BN/N from 27% to 45%. By 1880 these proportions for blacks were the highest for any group. Indeed, the highest white proportion was 29% for NW/NW. Between 1880 and 1900 most groups declined. For instance, the NW/NW proportion dropped from 29% to 25%, which left it tied for highest among whites with R/NW. The IT/IT, 2%, were especially low.

As with the 13-14 year olds, among the 15-16 year olds there was a reveral of the standing of the sexes between 1850 and 1880. In 1850, 31% of NW/NW males and 27% of 15-16 year old females atend school. By 1880, the male proportion had dropped to 29% and the female proportion had risen to 40%. The same trend was noticeable, though not as strong, among the IR/NW; IR/IR young women went a bit more often in each year. Indeed, among the IR/IR, the attendance of both males and females increased during these 30 years. Among the Germans, patterns were still different; the native born sons of German immigrants went to school more often than their daughters in each year, but among the foreign-born German children, 15-16 year old females went more

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frequently. However, the drop in the proportion of German young women of this age attending school between 1850 and 1880 was quite steep for both those born in the United States and in Germany: for G/NW from 19% to 6% and for G/G from 32% to 12%. Between 1880 and 1900, the Germans remained lowest, although the G/NW young women increased their atttendance from 6% to 16%. As with young men, the proportion of young women from other white groups declined some between 1880 and 1900. Among the new immigrant groups, the very small numbers make conclusions virtually impossible.

In 1850, black males went to school a bit more than females when they were 15-16 years old. But in 1880 in most instances black young women went more often. As with black young men, the attendance of 15-16 year old black young women increased between 1850 and 1880: for BS/S from 24% to 41%; for BS/N from 24% to 43%; and for BN/BN from 24% to 39%.

So there are various stories within these patterns: the relatively high attendance of Italian and Russian 5-6 year olds; the high attendance of Russian teenagers; the propensity of Russian parents to send their teenage sons to school more than their daughters; the similarity of blacks and Irish of native origins (both had rising teenage attendance); the different trajectories of attendance among teenage native white males and females and the reversal of their relative standing; the differing pattern among German and Irish children (the decline among the Germans and the rise among the Irish); and the high, climbing rate of black young men and women. What must be remembered is that these are proportions derived from an analysis with other variables held constant. They are, therefore, independent of occupational and economic distinctions between the groups.

Property ownership had an independent effect on school attendance in many instances. (Table 19) For 5-6 year olds there was a modest relation between property ownership and attendance among both blacks and whites in 1850, although it was sharpest for blacks. The proportion of black 5-6 year old boys from propertied families attending school in 1850 was 53% compared to 41% for those from families without property. For girls the same proportions were 16% and 31%. Among whites the differences, smaller to begin with, diminished by 1870. In 1900, however, white families without property were the least likely to send their young boys or girls to school. As among the younger groups, property ownership affected the attendance of white 7-12 year olds in 1850 and of blacks in both 1850 and 1860. In 1860, 79% of black 7-12 year old boys whose parents owned property attended school compared to 60% of those whose parents owned none. For girls the same proportions were 55% and 73%. By 1870, however, distinctions at this age largely had disappeared. Among white 7-12 year olds, the most notable distinctions occurred again in 1900 when children whose parents owned property without a mortgage attended more than those from other groups. For instance, 74% of girls whose parents did not own property, 79% of those whose parents owned with a mortgage, and 85% of those who owned free attended school in that year.

As for 13-14 year olds, almost always children whose parents had property attended school more often in each year. In 1900, again, young men whose parents owned their property without a mortgage were the most likely to attend school and those whose parents had no property were least likely. Patterns were similar though less striking for young women: 66% of young women whose parents owned without a mortgage attended school compared to 76% of young men in the same category. Attendance was especially high among children of black property holders. For example, the proportion of black and white 13-14 year old women from propertied families attending school in 1870 were, respectively, 85% and 62%. The attendance of whites without property decreased some between 1850 and 1870; among blacks in the same category it rose. Thus, black children from propertyless families went to school more often than whites in 1870. In 1850, 56% of young white and 43% of black from propertyless families attended school; in 1870 the same two proportions werre 53% and 67%. For young women, the white propertyless proportion dropped a little, from 55% to 54%; for blacks it rose from 53% to 73%.

Similar patterns were evident among 15-16 year olds. The proportion of white young men from families with property decreased between 1860 and 1870 from 45% to 32% while among blacks it rose from 29% to 33%. In fact, blacks usually had higher proportions than whites in the same age/property category.

For example, in 1850, among males from families with real property, 39% of whites and 53% of blacks attended schools. Among females the differences were not as great. By 1900, property had become an extremely important influence on attendance for whites. The main difference separated non-owners from owners, both those with and without mortgages: 18% of young white men from families without property attended school compared to 36% and 32% of those whose families owned property with and without mortgages. For young women the three proportions were, respectively, 16%, 39%, and 45%.

Among black 15-16 year olds without property, the relation between property and the relative attendance of young men and women shifted over time. In 1850, there were sharp male/female distinctions: 41% of young men and only 17% of young women attended. This distinction had disappeared by 1870. In fact, the trajectories of attendance went in opposite directions so that by 1870 the male proportion had dropped to 39% and the female had increased to 33%. There was, even more, an enormous rise in attendance between 1860 and 1870 among black young women whose families had both real and personal property, an increase from 32% to 71% (compared to a rise from 29% to 33% for young men), which made their attendance rate the highest of any group at that age. The groups with the next highest rates of attendance also were black. It is obvious that black families with property tried hard to keep their daughters in school.

In general, property influenced the attendance of older children most, and it was a more important factor among blacks than whites before 1900. By 1900, however, it was an exceptionally strong influence on the attendance of teenage whites. The effect of property in 1900 can be examined even more closely by isolating the foreign born population. This is especially important in light of Hogan's hypothesis -- based on aggregate data -- that education and property mobility were competing strategies of mobility among immigrants in the early twentieth century. Following his argument we should expect to find a negative relation between property acquisition and school attendance among immigrants. In fact, quite the opposite was the case. (Table 19A) The great distinction was between those who owned and those who did not. Whether or not there was a mortgage on the property made no difference. The influence of property on the school attendance of immigrants' children can be seen at every age, but especially among the youngest and oldest. Among 5-6 year old boys, 32% from propertyless families and 42% from families with property attended school; for girls the proportions were 32% and 49%. Among 15-16 year olds, only 7% of young men from families without property attended school compared to about 1/3 of those from families with property. Differences were equally dramatic for young women. In fact, propertied immigrants were slightly more likely to send their daughters than their sons to school. Clearly, property and schooling appeared complementary rather than competing avenues to mobility among immigrant families.

One other possible influence on school attendance, already discussed in the section on descriptive statistics, is citizenship, which, recall, can serve as a proxy for the decision to settle in America. With other factors constant, citizen influenced only the school attendance of teenage girls. For instance, 49% of the 13-14 year old daughters of citizens and 43% of those of non-citizens attended school; for 15-16 year old young women the same proportions were 25% and 16%. It is not immediately clear why citizenship status influenced the attendance of young women rather than young men. The effect of citizenship, however, may be masked in the analysis, because length of residence is not included as a variable.

Like citizenship, birth order had almost no influence on attendance in the multivariate analysis. The influence of birth order on the attendance of 13-14 year olds, evident in the descriptive statistics, does not appear in the MCAs. (Table 20) The reason, probably, is the inclusion of middle children and only children in the analysis. Middle children comprise the largest category and, really, are an imprecise designation, including, as they do, all children not the youngest or oldest in families with more than one child. A reanalysis including only youngest and eldest children might well show the differences reported earlier, which were found when using descriptive statistics.

Nor, with one exception, did parental literacy have any influence on school attendance. (Table 21) The one exception, pointed out earlier, was the children of black illiterates in 1850. They went to school more often at every age than did black children whose parents were literate. For example, among 5-6 year old males, 39% of the children of literates and 53% of the children of illiterates attended. Among 13-14 year olds the proportions for males were 43% and 48%; for females 7-12 they were 57% and 73%; for 15-16 year olds, 16% to 21%. After 1850 the distinction disappeared and there was no pattern. Recall that these are figures for a multivariate analysis. So illiteracy is not a surrogate for Southern birth. Usually, but not always, children of white literates attended school more often than did white children of illiterates. But there really was no discernible pattern. Remember, here, that only a very small proportion of white parents were illiterate.

One final issue: this analysis has argued strongly for the role of social and economic influences on school attendance. It might seem unnecessary to belabor the point. But Kaestle and Vinovskis have tried to make the contrary case for Massachusetts in the middle of the nineteenth-century. Based on a multivariate analysis they found that occupation had much less influence than the analysis in this paper shows. How are we to account for the difference? Elsewhere, I have argued that their results reflected a serious methodological flaw. They included all ages within one analysis. Age, of course, overpowered other variables and appeared the most potent influence. Even more, given the different relations between occupation and age among children of various ages -- recall the distinctions between 5-6 year olds and teenagers -- the interaction effects of the variables masked the real effect of occupation. In order to test my criticism, I ran a separate MCA in which children of all ages were included and in which age became a variable as it was in the Kaestle-Vinovskis analysis. (Table 22) The results are quite clear. In the latter ~~analysis, the effects of occupation~~, ~~evident in~~ the analysis with the population partitioned, are greatly diminished, and occupation appears much less important than it in fact was. Look at the predicted attendance proportions for 15-16 year old white males. When they are analysed as a group by themselves, the spread in the predicted attendance proportion for occupational groups in 1850 was from 16% to 50%, or more than 300%. In 1880, it was quite similar, from 16% to 48%. However, when all age and sex categories were considered together, the spread between the highest and lowest occupational group was from 57% to 65% in 1850 and from 59% to 75% in 1880, far lower differences. In 1900, the spread between occupational groups for the 15-16 year olds considered separately was 39 percentage points or, again, aboput 300%, ; for the analysis with age groups combined together it was only 10 percentage points, or about 20%. There is little doubt that the Kaestle-Vinovskis conclusions rest on a spurious method.

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One way to sort out the meaning of this detailed exposition of the complex strands in the data on school attendance is to return to the hypotheses with which this paper began. How does this analysis affect the leading ideas about school attendance that historians have advanced in recent years?

(1) It supports the Katz-Davey argument that school attendance began to rise during the depression of the late 1850's and then fell, especially among the working class, when industrial jobs for teenagers opened in larger numbers late in the century. It hints that working-class youngsters left school as soon as they were able to get jobs and that business class young people began to remain longer as they came to see schooling as a way of preparing for careers in commerce and the professions.

(2) The analysis also supports Davey's argument about the class differences that emerged in the attendance of young children. By the latter part of the century it does appear that many business class, well-to-do families were reluctant to trust their young daughters to the schools. Working-class families appear to have been less reluctant.

(3) The lack of very much class distinction among the 7-12 year olds, which Katz and Davey found in Hamilton, also appears in Philadelphia. However, what is particularly interesting in Philadelphia, and so far inexplicable, is the decline in the attendance of 7-12 year olds between 1880 and 1900.

(4) This analysis also support the distinctions Katz and Davey found between native and foreign born children of immigrants. The former were much more likely to go to school. However, what Katz and Davey were unable to examine in Hamilton were differences between Irish and German families over time. In Philadelphia, the trajectories of the two were quite different. The attendance of teenage children of Irish background increased; that of children of German background decreased. Perhaps the Germans were especially anxious to start their children at work and were able to secure jobs for them. Perhaps, too, as in Hamilton, the expansion of Catholic schools attracted an increased proportion of Irish children.

(5) Although there were relatively few "new" immigrants in the sample, the analysis does support the pattern that other scholars have found. Italian immigrants sent relatively low proportions of their children to school; Russian Jews sent high proportions. What is interesting within this pattern is that the Russians much more often sent their teenage sons than daughters to school. This differentiated them from most other groups. Recently, Perlmann and Miriam Cohen have argued that much of the distinction in school attendance between Russians and Jews disappears when occupation is held constant. This analysis does not support their conclusion. With the exception of 13-14 year old girls, Russians sent more children to school. However, it is possible that an analysis with a larger sample, one which

included more business class Italians and Russians, would modify the differences between the groups.

(6) What this analysis does support is Timothy Smith's and Stanley Lieberson's argument about the high school attendance of blacks. Recall that black teenagers had a higher rate of school attendance at the turn of the century than most other groups. Their attendance often was nothing short of phenomenal. More than that, the rate of attendance among them grew as the same time that it declined among other groups.

(7) Clearly, too, this analysis supports the arguments of Hershberg and his associates about the effect of Northern or Southern birth on black life. By 1900, Northern born black children went to school substantially more often than did black children born in the South.

(8) This analysis also supports Kaestle and Vinovskis's contentions about the drop in the school attendance of young children. Their data showed the drop between 1840 and 1860. This analysis shows that it continued through the end of the century. It also extends their argument by pointing out that in the mid-nineteenth century it was business class families who usually sent more of their 5-6 year olds to school whereas by 1900 it was more often the working-class, especially Italian and Russian immigrants, who sent most young children. Clearly, these trends tap important shifts in child-raising ideas and practices.

(9) However, this analysis contradicts Kaestle and Vinovskis's argument that parental occupation did not have very

much effect on school attendance. It shows how they reached their conclusion through a serious methodological error.

(10) The analysis gives modest support to arguments about the relation of birth order to school attendance. It found an influence in 1900 among 13-14 year olds only. This finding and other data point to the age 13-14 as pivotal years in which decisions about school and work were made.

(11) The analysis contradicts David Hogan's argument that property acquisition and school attendance were competing mobility strategies among immigrant families. To the contrary, this analysis shows that immigrants with property were the most likely to send their children to school. Hogan's argument rested on aggregate data and, thus, is probably an illustration of an ecological fallacy.

(12) There is one other very important idea about family strategy which this analysis did not test. That is, Mark Stern's argument, based on nominal level data from Buffalo, that low marital fertility and high rates of adolescent school attendance formed a distinct family strategy aimed at upward mobility. This important idea remains to be explored with these data.

(13) The implications of dual-labor market theory as advanced by Michael Piore receive modest support from this analysis. Among immigrants who had been in the United States between 5 and 19 years, those who had become citizens were more likely to send their children to school. This suggests that those immigrants who accepted settlement in America as permanent, who

no longer thought of themselves as temporary or target earners, would be more likely to allow their teenage children to go to school.

(14) The other important point about the labor market in this period is the deskilling of many jobs and the collapse of the distinction between skilled and unskilled workers in industry. In the mid-19th century the distinction between skilled wage workers and laborers was a fundamental divide within the working class. It was reflected on all sorts of measures, including school attendance. By 1900 the distinction had lessened and so had the differences between the groups. The children of skilled workers and of laborers differed little in school attendance.

(15) There are few specific hypotheses about how the school attendance of young women changed in the late nineteenth-century. Most of the work on women's education focuses on the colleges and points to a greatly expanded desire for formal higher education on the part of women. This desire also was reflected, this analysis shows, among women of secondary school age. The proportion of white women living with their parents attending school rose between 1850 and 1880 while the proportion of men attending declined a little. As a result, young women attended school a little less often than men at the start of the period and somewhat more often at the close. However, in the next twenty years the differences between the sexes diminished greatly. Within these general trends, there were distinctions between the

school attendance of young men and women from different occupational and ethnic backgrounds. What all of this means is that school attendance patterns among young men and women partly reflected different dynamics which, at this point, we can only dimly understand.

School attendance, it is clear, was sensitive to the great shifts in the labor market: the opening of industrial work for young people; the blurring of distinctions between skilled and unskilled work; the expansion of ~~white collar work, including,~~ for women, teaching; and the expanded industrial and white collar opportunities for blacks late in the century. At the same time school attendance reflected social and economic inequalities; not all families could afford the opportunity costs of sending young people to school after the age of 12 or 13. The way they chose between school and work for their children reflected distinctive family strategies, only some of which are visible at present. Some immigrants, it would seem, remained committed to returning to Europe and tried to accumulate as much money for that purpose as possible. For this reason they sent their children to work as early as possible. Others, accepting permanent residence in the United States, kept their children in school longer. Most working class families hoped for wages from working children. The question was when the children should start working, and the key ages when decisions were made were between 13 and 14. Thirteen or 14 year old children without older siblings were especially likely to be sent to work rather than to school. School attendance also, undoubtedly, was infuenced by the provision of facilities: Catholic schools; schools open to blacks; secondary schools; perhaps, too, expanded places for young women. Perhaps, even, the school system forced the decline in the attendance of young children through regulations and the absence of adequate places. Ideas about childhood also undoubtedly affected attendance, especially for young children. Then, too, social aspirations, anxieties, and cultural patterns influenced whether children went to school. The affluent appeared increasingly reluctant to send their young children to school. Germans teenagers and their families greatly preferred work at the earliest possible moment to school. Russians thought schools were more suitable places for their sons than their daughters. And, above all, black families hungered after education.

Table 1

Numbers of Children by Age and Birthplace

Male

Age		NWA/ NWA	NWA/ GER	NWA/ IR	GER/ GER	IR/ IR	IT/ IT	IT/ NW	RS/ RS	RS/ NW	BLACK/ NORTH	BLACK/ SOUTH
5-6	1850	323	241	197	57	59					380	32
	1860	239	313	310	25	9					387	28
	1870	245	292	244	11	9					263	20
	1880	205	261	248	6	4					439	43
	1900	429	88	107	1	0	4	23	4	48	41	6
7-12	1850	872	542	440	213	244					822	153
	1860	692	571	523	133	67					1058	137
	1870	751	887	783	44	35					767	120
	1880	536	696	672	41	20					1089	207
	1900	1113	275	289	16	7	16	38	34	70	110	28
13-14	1850	240	140	106	73	96					239	64
	1860	215	105	100	54	51					338	49
	1870	237	263	263	23	19					244	73
	1880	154	198	209	13	12					292	99
	1900	353	64	91	6	2	6	6	24	6	26	9
15-16	1850	236	95	107	78	100					199	62
	1860	247	89	99	77	60					291	64
	1870	229	210	203	22	18					222	60
	1880	130	171	184	22	22					227	93
	1900	356	68	89	8	7	11	3	26	6	24	18

Female

Age		NWA/ NWA	NWA/ GER	NWA/ IR	GER/ GER	IR/ IR	IT/ IT	IT/ NW	RS/ RS	RS/ NW	BLACK/ NORTH	BLACK/ SOUTH
5-6	1850	207	234	337	52	56					377	45
	1860	266	324	276	10	12					479	33
	1870	254	297	253	12	7					270	41
	1880	224	255	231	9	1					480	45
	1900	471	87	95	3	1	3	17	5	39	37	9
7-12	1850	562	903	462	158	209					1000	189
	1860	745	595	562	123	71					1246	137
	1870	848	963	763	54	45					834	208
	1850	635	716	707	37	17					1176	283
	1900	1174	271	283	18	6	14	42	42	72	106	43
13-14	1850	109	273	141	73	88					271	72
	1860	251	100	114	65	46					390	75
	1870	264	274	257	17	18					313	105
	1880	194	222	199	22	15					345	145
	1900	335	61	85	8	1	8	5	20	10	22	16
15-16	1850	264	86	100	65	119					293	85
	1860	233	90	113	70	92					425	114
	1870	290	223	236	29	16					337	136
	1880	164	218	197	19	25					338	150
	1900	316	72	110	15	6	6	6	29	4	26	21

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Table 2

Interactions of Ethnicity and Selected Factors
with School Attendance Dependent Variable

Yes=Sig. at .05 or less; No=not sig..05

Age		RPROF		OCC		BIRTH ORDER		SERVANTS	
		Male	Female	Male	Female	Male	Female	Male	Female
5-6									
	1850	No	No	No	No	No	No	No	No
	1860	No	Yes	No	Yes	No	No	No	No
	1870	Yes	No	No	No	No	No	No	No
	1880	NA	NA	No	No	No	No	No	Yes
7-12									
	1850	No	No	Yes	No	Yes	No	No	No
	1860	No	Yes	No	No	No	No	No	No
	1870	No	No	Yes	Yes	No	Yes	No	No
	1880	NA	NA	No	No	No	Yes	No	No
13-14									
	1850	No	No	No	No	No	No	No	No
	1860	No	Yes	No	No	No	No	No	No
	1870	No	No	No	No	No	No	No	No
	1880	NA	NA	No	No	No	No	No	No
15-16									
	1850	No	No	No	No	No	No	No	Yes
	1860	No	No	No	No	No	No	No	No
	1870	No	No	No	No	No	No	No	No
	1880	NA	NA	No	Yes	No	No	Yes	Yes

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Table 3 Percent in School

Male

Age		NWA/ NWA	NWA/ GER	NWA/ IR	GER/ GER	IR/ IR	IT/ IT	IT/ NW	RS/ RS	RS/ NW	BLACK/ NORTH	BLACK/ SOUTH
5-6												
	1850	0.46	0.46	0.42	0.28	0.24					0.40	0.36
	1860	0.34	0.31	0.44	0.16	0.56					0.26	0.50
	1870	0.19	0.24	0.27	0.27	0.33					0.23	0.30
	1880	0.33	0.41	0.42	0.33	0.25					0.33	0.28
	1900	0.24	0.30	0.34	NA	NA	0.33	0.40	0.27	0.35	0.29	0.17
7-12												
	1850	0.80	0.75	0.72	0.59	0.51					0.57	0.49
	1860	0.78	0.75	0.82	0.55	0.75					0.71	0.66
	1870	0.71	0.74	0.73	0.73	0.63					0.68	0.58
	1880	0.82	0.89	0.87	0.91	0.73					0.77	0.75
	1900											
13-14												
	1850	0.63	0.59	0.47	0.44	0.31					0.37	0.32
	~~1860~~	~~0.65~~	~~0.56~~	~~0.57~~	~~0.35~~	~~0.49~~					0.60	0.43
	1870	0.58	0.52	0.56	0.30	0.37					0.57	0.60
	1880	0.61	0.44	0.57	0.14	0.50					0.62	0.57
	1900	0.54	0.45	0.42	0.00	0.50	0.31	0.44	0.49	0.72	0.69	0.56
15-16												
	1850	0.27	0.21	0.21	0.10	0.10					0.14	0.06
	1860	0.38	0.28	0.31	0.06	0.10					0.29	0.31
	1870	0.30	0.20	0.27	0.00	0.11					0.38	0.35
	1880	0.34	0.16	0.23	0.04	0.12					0.40	0.25
	1900	0.26	0.14	0.17	0.00	0.17	0.30	0.00	0.10	0.22	0.42	0.17

Female

Age		NWA/ NWA	NWA/ GER	NWA/ IR	GER/ GER	IR/ IR	IT/ IT	IT/ NW	RS/ RS	RS/ NW	BLACK/ NORTH	BLACK/ SOUTH
5-6												
	1850	0.45	0.42	0.42	0.37	0.20					0.33	0.32
	1860	0.33	0.30	0.37	0.20	0.42					0.23	0.15
	1870	0.21	0.21	0.23	0.42	0.14					0.20	0.22
	1880	0.34	0.41	0.38	0.33	0.00					0.37	0.27
	1900	0.27	0.21	0.29	0.00	NA	0.60	0.31	0.43	0.48	0.16	0.33
7-12												
	1850	0.77	0.77	0.70	0.64	0.46					0.55	0.41
	1860	0.75	0.74	0.79	0.59	0.66					0.67	0.58
	1870	0.66	0.73	0.73	0.69	0.67					0.66	0.48
	1880	0.82	0.86	0.92	0.85	0.71					0.74	0.69
	1900	0.79	0.75	0.73	0.57	0.50	0.67	0.67	0.83	0.75	0.70	0.75
13-14												
	1850	0.56	0.56	0.53	0.40	0.26					0.40	0.25
	1860	0.62	0.59	0.61	0.29	0.37					0.53	0.59
	1870	0.60	0.55	0.54	0.29	0.22					0.64	0.33
	1880	0.71	0.41	0.58	0.29	0.25					0.63	0.45
	1900	0.58	0.34	0.51	0.00	NA	0.18	0.54	0.35	0.42	0.50	0.50
15-16												
	1850	0.25	0.19	0.18	0.12	0.09					0.13	0.11
	1860	0.30	0.28	0.21	0.09	0.07					0.20	0.15
	1870	0.30	0.23	0.21	0.17	0.00					0.38	0.18
	1880	0.35	0.08	0.23	0.10	0.12					0.37	0.21
	1900	0.23	0.10	0.12	0.00	0.00	0.00	0.31	0.13	0.24	0.36	0.19

BEST COPY AVAILABLE

Table 3A
Birthplace, Citizenship Status, and School Attendance:1900

% Attending School

Age/Sex		Parent: Foreign-born citizen	Foreign-born non-citizen	U.S. born whites
5-6				
	Male	0.30	0.20	0.24
	Female	0.30	0.34	0.27
7-12				
	Male	0.76	0.75	0.70
	Female	0.75	0.70	0.70
13-14				
	Male	0.54	0.54	0.30
	Female	0.57	0.47	0.22
15-16				
	Male	0.25	0.17	0.06
	Female	0.22	0.16	0.16

BEST COPY AVAILABLE

Table 3B
School Attendance by Years Parents in U.S.:
Foreign-born, 1900

% Attending School

Age/sex		Years Parent in U.S. 0-4	5-9	10-19	20+
5-6					
	Male	0.17	0.33	0.36	0.30
	Female	0.40	0.50	0.37	0.27
7-12					
	Male	0.61	0.75	0.75	0.77
	Female	0.60	0.72	0.76	0.72
13-14					
	Male	0.17	0.54	0.47	0.51
	Female	0.10	0.39	0.33	0.45
15-16					
	Male	0.00	0.05	0.15	0.16
	Female	0.00	0.16	0.12	0.19

BEST COPY AVAILABLE

Table 3C

Influence of Citizenship Status and Years in U.S. of Foreign-born parents on School Attendance White Teenagers: 1900

	%Attending School			
	Males		Females	
	13-14	15-16	13-14	15-16
Time U.S./Cit.				
Under 5 yrs.				
Non-cit.	0.22	0.00	NA	NA
Cit.	NA	NA	0.17	0.00
5-9 yrs.				
Non-cit.	0.56	0.04	0.28	0.21
Cit.	0.73	0.09	0.78	0.06
10-19 yrs.				
Non-cit.	0.35	0.08	0.20	0.15
Cit.	0.58	0.20	0.39	0.10
20+ yrs.				
Non-cit.	NA	0.25	0.08	0.17
Cit.	0.50	0.14	0.58	0.19

BEST COPY AVAILABLE

Table 4

Percent in School by Real Property, Whites

Age		Male			Female		
		None	1-1000	1000+	None	1-1000	1000+
5-6							
	1850	0.40	0.52	0.53	0.41	0.35	0.42
	1860	0.35	0.37	0.40	0.34	0.30	0.29
	1870	0.23	0.23	0.33	0.22	0.22	0.23
	1880	NA	NA	NA	NA	NA	NA
7-12							
	1850	0.70	0.76	0.85	0.71	0.81	0.77
	1860	0.76	0.81	0.81	0.74	0.76	0.81
	1870	0.73	0.75	0.72	0.71	0.70	0.70
	1880	NA	NA	NAb	NA	NA	NA
13-14							
	1850	0.49	0.57	0.75	0.47	0.53	0.66
	1860	0.52	0.54	0.62	0.52	0.75	0.65
	1870	0.52	0.51	0.61	0.53	0.52	0.61
	1880	NA	NA	NA	NA	NA	NA
15-16							
	1850	0.15	0.32	0.43	0.17	0.29	0.35
	1860	0.23	0.43	0.46	0.18	0.05	0.37
	1870	0.23	0.27	0.32	0.21	0.17	0.32
	1880	NA	NA	NA	NA	NA	NA

BEST COPY AVAILABLE

Table 4A

Property Ownership and School Attendance: Whites:1900

% Attending School

		Family owns:		Family
		Free	With Mort	No Prop.
Age/Sex				
5-6				
	Male	0.36	0.37	0.28
	Female	0.36	0.27	0.30
7-12				
	Male	0.83	0.75	0.76
	Female	0.81	0.76	0.75
13-14				
	Male	0.76	0.67	0.47
	Female	0.64	0.62	0.45
15-16				
	Male	0.33	0.40	0.15
	Female	0.42	0.36	0.14

BEST COPY AVAILABLE

Table 5

Percent in School: Real Property Worth $1000 or more

Age		Male NWA/ NWA	NWA/ GER	NWA/ IR	GER/ GER	IR/ IR	Female NWA/ NWA	NWA/ GER	NWA/ IR	GER/ GER	IR/ IR
5-6											
	1850	0.50	0.55	0.53	100.00	*	0.40	0.44	0.50	0.20	*
	1860	0.34	0.40	0.48	*	0.00	0.18	0.41	0.29	*	*
	1870	0.18	0.22	0.39	*	*	0.22	0.25	0.18	0.50	*
	1880	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
7-12											
	1850	0.86	0.83	0.86	0.75	0.75	0.79	0.78	0.70	0.67	0.25
	1860	0.83	0.76	0.84	0.60	100.00	0.68	0.81	0.85	0.67	100.00
	1870	0.68	0.73	0.74	0.88	100.00	0.61	0.76	0.74	0.75	0.60
	1880	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
13-14											
	1850	0.65	0.68	0.67	0.50	0.67	0.71	0.67	0.56	0.67	*
	1860	0.86	0.63	0.92	100.00	100.00	0.74	0.45	0.57	100.00	100.00
	1870	0.71	0.59	0.54	0.00	0.67	0.60	0.58	0.73	0.33	0.00
	1880	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
15-16											
	1850	0.47	0.36	0.50	0.25	0.33	0.33	0.31	0.18	0.00	0.00
	1860	0.55	0.33	0.38	0.33	0.50	0.46	0.41	0.41	0.00	0.17
	1870	0.35	0.17	0.40	0.00	0.00	0.39	0.25	0.39	0.25	0.00
	1880	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

BEST COPY AVAILABLE

Table 6
Percent in School by Birth order, Whites

Age		Male					Female				
		Eldest	Middle	Youngest	Only	Non HH	Eldest	Middle	Youngest	Only	Non-HH
5-6											
	1850	0.34	0.46	0.44	0.28	0.40	0.30	0.47	0.37	0.39	0.40
	1860	0.32	0.39	0.41	0.21	0.37	0.27	0.36	0.40	0.24	0.29
	1870	0.17	0.26	0.24	0.26	0.21	0.17	0.27	0.18	0.09	0.18
	1880	0.28	0.45	0.39	0.36	0.34	0.31	0.42	0.37	0.30	0.40
	1900	0.19	0.32	0.34	0.22		0.27	0.33	0.30	0.23	
7-12											
	1850	0.76	0.76	0.70	0.55	0.60	0.74	0.77	0.70	0.62	0.56
	1860	0.74	0.81	0.74	0.73	0.71	0.73	0.79	0.73	0.63	0.69
	1870	0.74	0.74	0.71	0.65	0.66	0.70	0.73	0.68	0.62	0.64
	1880	0.87	0.87	0.87	0.86	0.82	0.83	0.84	0.85	0.81	0.79
	1900	0.77	0.77	0.78	0.70		0.73	0.78	0.77	0.62	
13-14											
	1850	0.55	0.60	0.57	0.49	0.47	0.63	0.53	0.46	0.31	0.37
	1860	0.60	0.56	0.51	0.67	0.57	0.63	0.62	0.50	0.75	0.33
	1870	0.58	0.55	0.53	0.50	0.44	0.54	0.62	0.59	0.61	0.36
	1880	0.52	0.51	0.58	0.64	0.46	0.55	0.54	0.69	0.61	0.42
	1900	0.46	0.49	0.60	0.61		0.48	0.47	0.56	0.59	
15-16											
	1850	0.25	0.26	0.17	0.00	0.11	0.22	0.21	0.15	0.38	0.13
	1860	0.33	0.30	0.25	0.17	0.23	0.25	0.27	0.28	0.40	0.09
	1870	0.28	0.24	0.28	0.20	0.20	0.27	0.26	0.22	0.26	0.17
	1880	0.23	0.20	0.27	0.29	0.22	0.22	0.20	0.25	0.25	0.12
	1900	0.26	0.19	0.20	0.33		0.21	0.20	0.22	0.24	

BEST COPY AVAILABLE

Table 6A
School Attendance of Youngest and Eldest
Teenagers in 1900

	% Attending School			
	Males		Females	
	Youngest	Eldest	Youngest	Eldest
13-14 year olds				
White	0.60	0.49	0.56	0.48
Black	0.60	0.56	0.60	0.57
15-16 year olds				
White	0.20	0.26	0.22	0.21
Black	0.67	0.40	NA	0.27
13-14 year olds Parent/Child bp.				
NW/NW	0.65	0.60	0.71	0.57
G/G	NA	NA	NA	NA
G/NW	0.50	0.50	NA	0.36
IR/IR	NA	NA	NA	NA
IR/NW	0.65	0.33	0.55	0.45
IT/IT	NA	NA	NA	NA
IT/NW	NA	NA	NA	NA
RS/RS	0.56	0.37	0.50	0.30
RS/NW	NA	0.70	NA	0.38
B/N	NA	NA	NA	NA
B/S	NA	NA	NA	NA
13-14 year olds: Parents' occ. whites only				
PP	0.77	0.46	0.62	0.59
BE	0.88	0.57	0.71	0.86
MM	0.75	0.56	0.83	NA
SW	0.50	0.48	0.58	0.41
S	0.45	0.56	0.33	0.41
UNSK	0.59	0.29	0.57	0.42
13-14 year olds: Parents' prop. (Whites only)				
None	0.53	0.45	0.46	0.47
Own Free	0.71	0.64	0.90	0.56
Own Mort.	0.60	100.00	0.79	0.45

BEST COPY AVAILABLE

Table 7
Percent in School by Occupation of Whites

Age		Male							Female						
		P & P	BUSEMP	MASTER	SKILL	SEMI	UNSKIL	WOMEN	P & P	BUSEMP	MASTER	SKILL	SEMI	UNSKIL	WOMEN
5-6															
	1850	0.49	0.32	0.55	0.41	0.36	0.41	0.38	0.43	0.33	0.24	0.42	0.48	0.38	0.42
	1860	0.29	0.42	0.46	0.38	0.38	0.32	0.38	0.35	0.35	0.25	0.33	0.47	0.35	0.38
	1870	0.22	0.23	0.11	0.24	0.28	0.26	0.26	0.17	0.19	0.18	0.23	0.27	0.15	0.24
	1880	0.39	0.35	0.53	0.39	0.35	0.42	0.40	0.36	0.24	0.37	0.38	0.45	0.35	0.26
	1900	0.37	0.32	0.29	0.26	0.23	0.26	NA	0.20	0.18	0.31	0.32	0.26	0.33	0.13
7-12															
	1850	0.79	0.86	0.76	0.74	0.68	0.67	0.65	0.78	0.67	0.76	0.76	0.67	0.67	0.62
	1860	0.79	0.77	0.86	0.77	0.77	0.77	0.79	0.77	0.64	0.77	0.77	0.75	0.70	0.70
	1870	0.72	0.73	0.73	0.72	0.78	0.72	0.68	0.67	0.68	0.75	0.73	0.75	0.70	0.68
	1880	0.86	0.90	0.93	0.88	0.87	0.79	0.83	0.83	0.88	0.92	0.84	0.84	0.79	0.81
	1900	0.72	0.73	0.77	0.77	0.78	0.74	0.87	0.77	0.76	0.79	0.76	0.77	0.70	0.74
13-14															
	1850	0.74	0.58	0.70	0.54	0.58	0.49	0.42	0.60	0.38	0.77	0.55	0.38	0.39	0.38
	1860	0.71	0.65	0.70	0.52	0.60	0.42	0.60	0.69	0.67	0.63	0.56	0.53	0.40	0.44
	1870	0.55	0.68	0.58	0.60	0.52	0.52	0.39	0.59	0.76	0.58	0.57	0.59	0.42	0.47
	1880	0.65	0.69	0.70	0.51	0.49	0.37	0.38	0.70	0.72	0.67	0.48	0.45	0.59	0.46
	1900	0.74	0.64	0.57	0.54	0.56	0.50	0.48	0.64	0.68	0.84	0.47	0.46	0.41	0.70
15-16															
	1850	0.35	0.17	0.24	0.17	0.28	0.16	0.15	0.35	0.40	0.38	0.16	0.23	0.16	0.14
	1860	0.47	0.36	0.40	0.23	0.16	0.11	0.28	0.33	0.26	0.33	0.20	0.10	0.12	0.16
	1870	0.37	0.39	0.35	0.21	0.10	0.17	0.24	0.27	0.52	0.39	0.21	0.17	0.14	0.22
	1880	0.27	0.23	0.37	0.15	0.22	0.17	0.19	0.32	0.36	0.28	0.14	0.14	0.12	0.25
	1900	0.35	0.32	0.51	0.16	0.15	0.12	0.19	0.28	0.39	0.32	0.15	0.14	0.16	0.00

BEST COPY AVAILABLE

Table 8

Percent in School: Prof. & Prop. (Whites only)

		Male					Female				
Age		NWA/ NWA	NWA/ GER	NWA/ IR	GER/ GER	IR/ IR	NWA/ NWA	NWA/ GER	NWA/ IR	GER/ GER	IR/ IR
5-6											
	1850	0.46	0.52	0.59	0.26	*	0.41	0.32	0.61	0.75	0.00
	1860	0.30	0.25	0.33	0.33	0.00	0.20	0.43	0.50	*	0.50
	1870	0.10	0.33	0.22	0.00	*	0.11	0.20	0.20	0.00	*
	1880	0.27	0.44	0.42	*	100.00	0.22	0.46	0.43	*	*
7-12											
	1850	0.80	0.77	0.76	0.77	0.75	0.81	0.80	0.71	0.75	0.60
	1860	0.81	0.82	0.82	0.31	0.75	0.78	0.78	0.78	0.64	0.86
	1870	0.65	0.78	0.71	0.80	100.00	0.51	0.77	0.76	0.78	100.00
	1880	0.79	0.91	0.89	0.83	0.00	0.79	0.88	0.81	100.00	100.00
13-14											
	1850	0.76	0.70	0.71	0.83	0.67	0.70	0.43	0.63	0.50	0.50
	1860	0.82	0.71	0.77	0.25	100.00	0.70	0.72	0.67	0.63	0.60
	1870	0.62	0.56	0.53	0.00	0.00	0.53	0.63	0.67	100.00	0.00
	1880	0.75	0.57	0.67	*	100.00	0.88	0.50	0.93	0.33	0.00
15-16											
	1850	0.44	0.36	0.17	0.13	0.25	0.38	0.44	0.17	0.33	0.29
	1860	0.59	0.44	0.36	0.27	0.20	0.42	0.25	0.46	0.18	0.10
	1870	0.50	0.15	0.50	0.00	0.00	0.34	0.26	0.22	0.00	0.00
	1880	0.60	0.14	0.26	0.00	0.00	0.46	0.10	0.48	0.00	0.00

BEST COPY AVAILABLE

Table 9

Percent in School: Skilled Workers' Children

		Male					Female				
Age		NWA/ NWA	NWA/ GER	NWA/ IR	GER/ GER	IR/ IR	NWA/ NWA	NWA/ GER	NWA/ IR	GER/ GER	IR/ IR
5-6											
	1850	0.45	0.42	0.42	0.23	0.25	0.42	0.45	0.43	0.24	0.50
	1860	0.37	0.34	0.48	0.14	0.50	0.37	0.27	0.40	0.17	0.67
	1870	0.23	0.22	0.29	0.33	0.00	0.24	0.19	0.27	0.33	0.50
	1880	0.31	0.44	0.41	0.50	*	0.36	0.39	0.37	0.50	*
7-12											
	1850	0.82	0.78	0.69	0.62	0.44	0.82	0.79	0.79	0.72	0.53
	1860	0.77	0.77	0.84	0.61	0.78	0.81	0.72	0.86	0.62	0.56
	1870	0.69	0.71	0.78	0.84	0.75	0.51	0.74	0.78	0.78	1.00
	1880	0.83	0.90	0.86	0.95	0.83	0.86	0.84	0.82	0.75	0.67
13-14											
	1850	0.64	0.65	0.46	0.36	0.26	0.59	0.63	0.58	0.50	0.32
	1860	0.51	0.51	0.58	0.42	0.69	0.64	0.58	0.74	0.26	0.25
	1870	0.64	0.54	0.69	0.30	0.50	0.66	0.57	0.52	0.00	0.00
	1880	0.59	0.38	0.64	0.13	0.67	0.65	0.40	0.48	0.22	0.33
15-16											
	1850	0.24	0.13	0.18	0.07	0.13	0.18	0.17	0.22	0.09	0.08
	1860	0.35	0.19	0.36	0.03	0.08	0.24	0.30	0.19	0.04	0.13
	1870	0.26	0.19	0.20	0.00	0.00	0.28	0.12	0.25	0.25	0.00
	1880	0.09	0.17	0.19	0.00	0.25	0.23	0.06	0.09	0.22	0.00

Table 10

Percent in School: Unskilled Workers' Children

Age		Male NWA/ NWA	Male NWA/ GER	Male NWA/ IR	Male GER/ GER	Male IR/ IR	Female NWA/ NWA	Female NWA/ GER	Female NWA/ IR	Female GER/ GER	Female IR/ IR
5-6											
	1850	0.69	0.43	0.37	0.38	0.32	0.32	0.48	0.40	0.00	0.37
	1860	0.38	0.14	0.38	0.00	*	0.40	0.38	0.33	*	0.50
	1870	0.22	0.23	0.28	0.00	0.50	0.14	0.27	0.12	100.00	0.00
	1880	0.56	0.40	0.42	0.00	0.33	0.36	0.33	0.35	*	0.00
7-12											
	1850	0.67	0.72	0.78	0.42	0.59	0.72	0.73	0.73	0.52	0.55
	1860	0.63	0.63	0.79	0.47	0.85	0.62	0.76	0.72	0.53	0.62
	1870	0.63	0.80	0.72	0.78	0.79	0.67	0.65	0.72	100.00	0.60
	1890	0.73	0.86	0.90	0.83	0.57	0.79	0.86	0.78	100.00	0.67
13-14											
	1850	0.50	0.67	0.52	0.20	0.24	0.35	0.33	0.37	0.29	0.56
	1860	0.60	0.38	0.44	0.50	0.30	0.43	0.44	0.54	0.10	0.43
	1670	0.44	0.69	0.51	0.67	0.38	0.67	0.41	0.42	0.00	0.26
	1880	0.38	0.13	0.41	0.33	0.40	0.29	0.33	0.50	100.00	0.29
15-16											
	1850	0.13	0.38	0.16	0.00	0.13	0.27	0.13	0.18	0.00	0.14
	1860	0.21	0.10	0.10	0.00	0.11	0.10	0.33	0.19	0.08	0.00
	1870	0.33	0.00	0.20	0.00	0.25	0.00	0.11	0.18	0.00	0.00
	1880	0.50	0.00	0.16	0.00	0.00	0.00	0.00	0.14	0.00	0.14

Table 10A
Birthplace Group, Fathers' Occupation and
School Attendance:Whites, 1900

% Attending

		NW/NW	IR/NW	IR/IR	GER/NW	GER/GER	IT/IT	IT/NW	RS/RS	RS/NW
Males										
5-6										
	PP	0.33	NA	NA	0.38	NA	NA	0.40	NA	0.40
	SK	0.23	0.32	NA	0.26	NA	0.50	0.50	0.29	0.30
	UNSK	0.59	0.41	NA	0.25	NA	0.17	0.36	NA	0.40
7-12										
	PP	0.81	0.90	NA	0.75	NA	0.50	0.86	100.00	0.79
	SK	0.80	0.71	NA	0.78	0.80	0.56	6.65	0.85	0.73
	UNSK	0.77	0.84	NA	0.71	NA	0.76	0.53		0.60
13-14										
	PP	0.86	NA	NA	0.40	NA	NA	NA	0.67	NA
	SK	0.46	0.40	NA	0.52	NA	0.25	0.22	0.39	0.60
	UNSK	0.43	0.63	NA	0.67	NA	0.50	NA	NA	NA
15-16										
	PP	0.42	NA	NA	0.17	NA	NA	NA	0.14	NA
	SK	0.20	0.24	NA	0.14	0.00	0.07	0.00	0.09	0.13
	UNSK	0.23	0.05	NA	0.33	NA	0.00	NA	NA	NA
Females										
5-6										
	PP	0.20	NA	NA	0.33	NA	NA	0.25	NA	0.60
	SK	0.31	0.37	NA	0.20	NA	NA	0.22	0.33	0.47
	UNSK	0.26	0.35	NA	NA	NA	NA	0.58	NA	NA
7-12										
	PP	0.76	0.85	NA	0.70	NA	0.40	0.69	0.90	0.77
	SK	0.76	0.72	NA	0.79	0.63	0.70	0.52	0.91	0.72
	UNSK	0.81	0.76	NA	0.86	NA	0.63	0.65	NA	0.60
13-14										
	PP	0.60	NA	NA	0.83	NA	NA	0.38	0.45	0.60
	SK	0.51	0.48	NA	0.41	0.00	0.11	NA	0.31	0.31
	UNSK	0.33	0.22	NA	NA	NA	0.43	NA	NA	NA
15-16										
	PP	0.45	NA	NA	NA	NA	NA	0.43	0.31	NA
	SK	0.16	0.23	NA	0.14	0.00	0.00	NA	0.10	0.29
	UNSK	0.29	0.30	NA	NA	NA	NA	NA	NA	NA

Table 11

Percent in School by Number of Servants, 1880 (Whites)

		Number					
Age		None	1	2+	None	1	2+
5-6							
	Male	0.39	0.35	0.39	706.00	62.00	18.00
	Female	0.37	0.41	0.33	721.00	59.00	12.00
7-12							
	Male	0.86	0.82	0.94	153.00	153.00	48.00
	Female	0.83	0.88	0.69	2123.00	158.00	54.00
13-14							
	Male	0.50	0.82	0.86	588.00	44.00	14.00
	Female	0.52	0.76	0.50	624.00	58.00	20.00
15-16							
	Male	0.19	0.47	0.73	538.00	53.00	11.00
	Female	0.17	0.26	0.56	590.00	72.00	25.00

Table 12

Percent in School by Literacy of Parents and Birthplace, Blacks

		Male				Female			
		North Born		South Born		North Born		South Born	
Age		Lit.	Illit.	Lit.	Illit.	Lit.	Illit.	Lit.	Illit.
5-6									
	1850	0.36	0.54	0.32	0.46	0.32	0.32	0.28	0.46
	1860	0.28	0.17	0.40	0.50	0.25	0.16	0.17	0.11
	1870	0.22	0.15	0.25	0.13	0.19	0.15	0.04	0.25
	1880	0.32	0.29	0.16	0.50	0.36	0.32		
7-12									
	1850	0.57	0.70	0.43	0.67	0.51	0.72	0.41	0.47
	1860	0.69	0.70	0.59	0.68	0.67	0.68	0.60	0.58
	1870	0.68	0.66	0.46	0.71	0.69	0.66	0.49	0.59
	1880	0.78	0.72	0.81	0.68	0.76	0.70	0.75	0.73
13-14									
	1850	0.35	0.55	0.31	0.42	0.41	0.57	0.25	0.33
	1860	0.62	0.51	0.50	0.38	0.55	0.59	0.58	0.67
	1870	0.60	0.50	0.65	0.62	0.72	0.75	0.50	0.35
	1880	0.61	0.46	0.61	0.46	0.70	0.63		
15-16									
	1850	0.14	0.26	0.00	0.08	0.14	0.14	0.09	0.20
	1860	0.28	0.19	0.26	0.37	0.24	0.13	0.20	0.15
	1870	0.41	0.26	0.42	0.33	0.48	0.36	0.28	0.25
	1880	0.35	0.50	0.21	0.21	0.41	0.47	0.28	0.31

Table 13

Percent in School by Birth order , Blacks

Age		Male					Female				
		Eldest	Middle	Youngest	Only	Non HH	Eldest	Middle	Youngest	Only	Non-HH
5-6											
	1850	0.36	0.45	0.41	0.32	0.36	0.27	0.37	0.35	0.17	0.32
	1860	0.19	0.25	0.31	0.25	0.38	0.14	0.19	0.30	0.29	0.28
	1870	0.08	0.26	0.20	0.15	0.30	0.17	0.21	0.15	0.10	0.25
	1880	0.14	0.38	0.41	0.29	0.33	0.26	0.43	0.38	0.37	0.34
	1900	0.00	0.25	0.14	0.50		0.14	0.23	0.23	0.00	
7-12											
	1850	0.59	0.61	0.64	0.53	0.45	0.56	0.56	0.67	0.55	0.43
	1860	0.64	0.76	0.72	0.72	0.68	0.66	0.76	0.67	0.56	0.57
	1870	0.69	0.79	0.69	0.75	0.58	0.65	0.71	0.73	0.65	0.54
	1880	0.76	0.81	0.79	0.78	0.72	0.79	0.77	0.78	0.75	0.63
	1900	0.52	0.77	0.76	0.53		0.63	0.73	0.60	0.58	
13-14											
	1850	0.55	0.40	0.39	0.38	0.25	0.65	0.51	0.42	0.50	0.18
	1860	0.62	0.65	0.59	0.44	0.52	0.66	0.66	0.60	0.56	0.39
	1870	0.57	0.60	0.68	0.75	0.54	0.68	0.77	0.86	0.76	0.41
	1880	0.58	0.63	0.56	0.67	0.61	0.79	0.67	0.77	0.51	0.41
	1900	0.56	0.71	0.60	100.00		0.57	0.55	0.60	0.83	
15-16											
	1850	0.16	0.18	0.24	0.27	0.05	0.26	0.15	0.14	0.07	0.08
	1860	0.31	0.31	0.24	0.32	0.27	0.22	0.26	0.14	0.17	0.16
	1870	0.47	0.36	0.30	0.41	0.36	0.38	0.45	0.53	0.43	0.23
	1880	0.47	0.37	0.33	0.33	0.31	0.44	0.35	0.35	0.35	0.25
	1900	0.40	0.23	0.67	0.00		0.27	0.36	0.67	0.20	

Table 14

Percent in School by Real Property,Blacks

Age		Male			Female		
		None	1-1000	1000+	None	1-1000	1000+
5-6							
	1850	0.39	0.36	0.60	0.31	0.33	0.50
	1860	0.26	0.55	0.47	0.22	0.18	0.47
	1870	0.24	0.00	0.33	0.20	0.18	0.13
7-12							
	1850	0.54	0.71	0.74	0.51	0.70	0.74
	1860	0.70	0.73	0.71	0.65	0.67	0.89
	1870	0.66	0.50	0.76	0.62	0.69	0.48
13-14							
	1850	0.35	0.45	0.50	0.36	0.57	0.86
	1860	0.56	0.75	0.77	0.52	0.59	0.95
	1870	0.57	0.75	0.64	0.56	0.42	0.90
15-16							
	1850	0.11	0.40	0.50	0.12	0.00	0.40
	1860	0.28	0.27	0.41	0.18	0.18	0.53
	1870	0.37	0.33	0.57	0.29	0.55	0.75

Table 15

Percent in School by Occupation of Blacks

		Male							Female						
Age		P & F	BUSEMP	MASTER	SKILL	SEMI	UNSKIL	WOMEN	P & P	BUSEMP	MASTER	SKILL	SEMI	UNSKIL	WOMEN
5-6															
	1850	0.64	*	100.00	0.40	0.43	0.38	0.34	0.33	*	0.20	0.33	0.30	0.32	0.39
	1860	0.35	0.40	*	0.26	0.26	0.23	0.30	0.44	0.00	*	0.30	0.18	0.18	0.23
	1870	0.13	*	0.22	0.14	0.25	0.17	0.24	0.13	*	0.00	0.31	0.13	0.21	0.19
	1880	0.47	100.00	0.50	0.23	0.31	0.35	0.25	0.32	0.00	0.14	0.29	0.39	0.32	0.33
7-12															
	1850	0.65	100.00	0.56	0.57	0.57	0.57	0.58	0.69	100.00	0.42	0.61	0.55	0.57	0.48
	1860	0.66	*	100.00	0.76	0.73	0.66	0.64	0.82	0.80	*	0.78	0.69	0.63	0.55
	1870	0.76	0.68	0.76	0.75	0.71	0.68	0.62	0.72	0.80	0.76	0.70	0.77	0.54	0.58
	1880	0.82	0.83	0.84	0.78	0.80	0.73	0.72	0.78	0.63	0.93	0.78	0.79	0.70	0.71
13-14															
	1850	100.00	*	0.50	0.28	0.41	0.38	0.37	0.56	100.00	100.00	0.58	0.53	0.48	0.21
	1860	0.60	0.00	0.00	0.72	0.60	0.59	0.50	0.57	*	*	0.72	0.66	0.48	0.46
	1870	0.73	100.00	0.83	0.60	0.55	0.56	0.64	0.70	100.00	100.00	0.70	0.70	0.66	0.60
	1880	0.80	100.00	0.88	0.62	0.62	0.51	0.54	100.00	*	0.71	0.67	0.68	0.59	0.58
15-16															
	1850	0.33	*	0.00	0.15	0.16	0.18	0.06	0.36	*	0.00	0.30	0.22	0.13	0.09
	1860	0.50	*	0.00	0.31	0.30	0.22	0.19	0.43	0.00	*	0.29	0.20	0.13	0.17
	1870	0.43	100.00	0.67	0.36	0.25	0.33	0.33	0.41	0.50	0.83	0.44	0.40	0.37	0.39
	1880	0.92	0.50	0.50	0.29	0.33	0.18	0.30	0.65	0.00	0.50	0.34	0.32	0.35	0.39

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Table 15A
White and Black Working Class School Attendance:1900

% Attending

		Fathers' Occupation		
		Skilled	Semi-Skilled	Un-Skilled
Males				
13-14				
	White	0.54	0.56	0.50
	Black	0.50	0.60	0.73
15-16				
	White	0.16	0.15	0.12
	Black	0.50	0.23	0.31
Females				
13-14				
	White	0.47	0.46	0.41
	Black	0.83	0.54	0.59
15-16				
	White	0.15	0.14	0.16
	Black	0.50	0.15	0.23

Table 16

Summary Statistics:MCA Analysis of School Attendance

Main Effects:

Betas

Age and Sex		PCETH White	PCETH Black	OCC White	OCC Black	PROP White	PROP Black	BORDER White	BORDER Black	HFLIT White	HFLIT Black	(a) NONCH White	(a) NONCH Black	HFUNEMP White	AGEHH MIG.US White
5-6	Male														
	1850	0.12	0.06	0.11	0.20	0.05	0.06	0.14	0.17	0.07	0.12	0.02	0.03		
	1860	0.15	0.17	0.13	0.09	0.08	0.25	0.12	0.05	0.10	0.05	0.02	0.01		
	1870	0.04	0.05	0.10	0.29	0.09	0.03	0.05	0.17	0.03	0.10	0.01	0.08		
	1880	0.06	0.09	0.07	0.16	NA	NA	0.18	0.19	0.03	0.04	0.04	0.03		
	1900	0.12		0.09		0.14		0.08				0.07		0.02	0.03
	Female														
	1850	0.08	0.03	0.10	0.11	0.00	0.07	0.13	0.06	0.02	0.01	0.01	0.10		
	1860	0.05	0.14	0.14	0.16	0.08	0.17	0.15	0.10	0.04	0.07	0.05	0.04		
	1870	0.04	0.11	0.11	0.17	0.06	0.11	0.17	0.09	0.02	0.08	0.03	0.09		
	1880	0.06	0.09	0.15	0.18	NA	NA	0.06	0.11	0.05	0.07	0.00	0.04		
	1900	0.12		0.09		0.06		0.10				0.03		0.02	0.08
7-12	Male														
	1850	0.18	0.07	0.05	0.07	0.06	0.10	0.08	0.07	0.00	0.15	0.07	0.07		
	1860	0.11	0.12	0.08	0.13	0.05	0.05	0.04	0.10	0.04	0.02	0.01	0.06		
	1870	0.05	0.01	0.06	0.11	0.08	0.11	0.06	0.09	0.03	0.08	0.03	0.13		
	1880	0.09	0.05	0.01	0.09	NA	NA	0.03	0.06	0.02	0.11	0.03	0.07		
	1900	0.07		0.04		0.05		0.03				0.01		0.03	0.03
	Female														
	1850	0.20	0.07	0.08	0.11	0.02	0.10	.06	0.08	0.00	0.12	0.12	0.07		
	1860	0.10	0.02	0.12	0.11	0.06	0.08	0.08	0.13	0.00	0.02	0.03	0.06		
	1870	0.06	0.10	0.09	0.24	0.04	0.11	0.08	0.05	0.08	0.03	0.02	0.05		
	1880	0.04	0.03	0.12	0.11	NA	NA	0.07	0.02	0.06	0.05	0.01	0.14		
	1900	0.09		0.06		0.07		0.11				0.02		0.03	0.03
13-14	Male														
	1850	0.22	0.15	0.12	0.23	0.17	0.06	0.14	0.16	0.03	0.05	0.12	0.21		
	1860	0.13	0.12	0.10	0.24	0.13	0.17	0.10	0.10	0.01	0.13	0.05	0.13		
	1870	0.08	0.14	0.14	0.22	0.09	0.15	0.10	0.17	0.04	0.04	0.05	0.13		
	1880	0.17	0.06	0.25	0.19	NA	NA	0.05	0.10	0.10	0.14	0.09	0.11		
	1900	0.09		0.13		0.19		0.07				0.05		0.00	0.01
	Female														
	1850	0.13	0.16	0.20	0.18	0.04	0.09	0.15	0.16	0.08	0.01	0.10	0.21		
	1860	0.17	0.05	0.16	0.23	0.20	0.15	0.12	0.04	0.06	0.06	0.22	0.21		
	1870	0.12	0.12	0.11	0.15	0.12	0.28	0.07	0.17	0.05	0.06	0.18	0.13		
	1880	0.23	0.03	0.26	0.19	NA	NA	0.06	0.19	0.07	0.09	0.27	0.24		
	1900	0.23		0.17		0.12		0.03				0.09		0.04	0.08
15-16	Male														
	1850	0.14	0.22	0.17	0.21	0.16	0.16	0.16	0.08	0.10	0.06	0.01	0.13		
	1860	0.19	0.13	0.20	0.23	0.14	0.15	0.07	0.07	0.00	0.05	0.06	0.10		
	1870	0.16	0.11	0.16	0.28	0.10	0.25	0.08	0.21	0.05	0.02	0.03	0.12		
	1880	0.14	0.08	0.24	0.32	NA	NA	0.13	0.08	0.10	0.20	0.04	0.06		
	1900	0.13		0.20		0.17		0.07				0.08		0.00	0.05
	Female														
	1850	0.10	0.06	0.21	0.27	0.08	0.02	0.11	0.19	0.04	0.05	0.04	0.04		
	1860	0.15	0.06	0.21	0.23	0.08	0.07	0.08	0.04	0.06	0.08	0.22	0.06		
	1870	0.11	0.10	0.18	0.19	0.10	0.21	0.04	0.12	0.05	0.14	0.13	0.04		
	1880	0.29	0.03	0.24	0.25	NA	NA	0.05	0.08	0.08	0.02	0.30	0.10		
	1900	0.11		0.18		0.18		0.02				0.11		0.04	0.05

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Table 16(cont.)

		Co-variates: Raw reg.coef.										Main Effects Sig.?	
		AGE		TOTCH		SEFORE		RSQUARE		GRAND MEAN			
Age and Sex		White	Black	White	Black	White	Black	White	Black	White	Black	White	Black
5-6	Male												
	1850	0.23	0.16	0.02	-0.04	0.01	0.00	0.11	0.10	0.40	0.42	yes	no
	1860	0.32	0.18	-0.01	0.01	0.01	0.02	0.15	0.16	0.37	0.24	yes	yes
	1870	0.34	0.18	-0.01	0.05	0.01	0.00	0.20	0.20	0.23	0.20	yes	no
	1880	0.37	0.21	-0.01	0.02	0.02	-0.01	0.19	0.14	0.38	0.32	yes	yes
	1900	0.24		-0.02		0.00		0.11		0.29		no	
	Female												
	1850	0.32	0.12	-0.01	0.03	0.00	-0.01	0.13	0.07	0.42	0.31	no	no
	1860	0.33	0.18	-0.12	0.00	-0.01	0.03	0.17	0.16	0.34	0.21	yes	yes
	1870	0.29	0.16	-0.02	0.02	0.00	0.00	0.16	0.10	0.22	0.17	yes	no
	1880	0.35	0.23	0.02	0.03	0.02	0.01	0.17	0.13	0.35	0.37	yes	yes
	1900	0.30		-0.02		0.02		0.15		0.27		no	
7-12	Male												
	1850	-.01	0.02	0.00	-0.02	0.01	-0.01	0.05	0.05	0.76	0.61	yes	yes
	1860	0.02	0.02	0.02	0.02	-0.01	0.00	0.04	0.06	0.79	0.71	yes	yes
	1870	0.02	0.05	-0.01	0.02	-0.01	0.02	0.03	0.09	0.73	0.74	yes	yes
	1880	0.00	0.04	0.01	0.00	0.00	0.00	0.02	0.05	0.85	0.79	yes	no
	1900	0.03		-0.01		0.00		0.03		0.77		no	
	Female												
	1850	-0.01	0.00	0.01	0.00	0.00	-0.05	0.06	0.06	0.76	0.57	yes	yes
	1860	0.03	0.02	0.01	0.01	0.02	0.02	0.05	0.06	0.76	0.70	yes	yes
	1870	0.03	0.06	0.00	0.02	0.00	0.00	0.03	0.14	0.70	0.70	yes	yes
	1880	0.01	0.02	-0.01	0.01	0.00	0.02	0.03	0.03	0.83	0.77	yes	no
	1900	0.03		0.01		0.00		0.04		0.76		yes	
13-14	Male												
	1850	-0.19	-0.25	-.02	-0.05	-0.01	0.04	0.16	0.19	0.60	0.44	yes	no
	1860	-0.16	-0.09	0.01	-0.01	-0.01	-0.01	0.12	0.12	0.60	0.62	yes	yes
	1870	-0.11	-0.20	-0.03	0.02	0.01	0.00	0.06	0.13	0.57	0.63	yes	no
	1880	-0.22	-0.18	-0.02	-0.02	0.01	0.00	0.16	0.10	0.57	0.61	yes	no
	1900	-0.22		0.05		0.01		0.18		0.53		yes	
	Female												
	1850	-0.20	-0.06	0.00	0.00	0.01	-0.01	0.14	0.11	0.56	0.54	yes	no
	1860	-0.13	-0.04	0.02	0.01	0.02	0.00	0.16	0.08	0.64	0.65	yes	yes
	1870	-0.13	-0.11	0.01	0.02	-0.02	0.05	0.07	0.17	0.61	0.76	yes	no
	1880	-0.17	-0.15	-0.02	-0.01	0.04	-0.04	0.20	0.12	0.63	0.72	yes	yes
	1900	-0.19		-0.02			0.00	0.15		0.53		yes	
15-16	Male												
	1850	-0.15		0.01	-0.02	0.01	-0.02	0.18	0.18	0.27	0.19	yes	no
	1860	-0.24	-0.22	0.02	-0.02	0.30	0.00	0.20	0.16	0.34	0.30	yes	no
	1870	-0.17	-0.08	0.01	0.00	0.02	-0.02	0.11	0.17	0.28	0.39	yes	no
	1880	-0.16	-0.23	0.02	0.03	0.02	0.03	0.15	0.23	0.25	0.40	yes	yes
	1900	-0.06		-0.02		0.03		0.15		0.22		yes	yes
	Female												
	1850	-.18	-0.04	0.00	-0.01	0.02	0.00	0.14	0.11	0.24	0.17	yes	no
	1860	-0.21	-0.19	0.00	0.01	-0.01	0.01	0.16	0.16	0.30	0.23	yes	yes
	1870	-0.13	-0.23	-0.01	0.02	-0.01	0.01	0.10	0.17	0.28	0.45	yes	no
	1880	-0.10	-0.22	-0.02	0.00	0.34	0.03	0.21	0.15	0.29	0.41	yes	no
	1900	-0.17		-0.01	0.00			0.18	0.22		yes		yes

Table 17

Adjusted Means MCA School Attendance Analysis: Parents' Occupation

Age and Sex		White							Black						
		P&P	BusEmp	Mast	Skill	Semi-	Unskil	Women	P&P	BusEmp	Mast	Skill	Semi-	Unskil	Women
5-6	Male														
	1850	0.48	0.22	0.47	0.42	0.46	0.52	0.40	0.63	NA	0.92	0.44	0.46	0.38	0.24
	1860	0.31	0.31	0.32	0.32	0.37	0.27	0.49	0.15	NA	NA	0.17	0.25	0.27	0.26
	1870	0.22	0.26	0.10	0.26	0.24	0.23	0.28	0.00	NA	0.00	0.02	0.31	0.19	0.22
	1880	0.37	0.34	0.47	0.49	0.34	0.40	0.42	0.50	NA	0.46	0.23	0.32	0.34	0.29
	1900	0.33	0.36	0.35	0.28	0.26	0.26	NA							
	Female														
	1850	0.43	0.53	0.34	0.44	0.49	0.35	0.47	0.25	NA	0.13	0.33	0.30	0.30	0.41
	1860	0.33	0.34	0.24	0.35	0.48	0.32	0.51	0.37	NA	NA	0.28	0.16	0.22	0.30
	1870	0.17	0.23	0.26	0.24	0.25	0.13	0.27	0.15	NA	0.00	0.22	0.13	0.20	0.28
	1880	0.29	0.16	0.36	0.36	0.41	0.32	0.16	0.36	NA	0.13	0.28	0.41	0.32	0.41
	1900	0.21	0.19	0.29	0.30	0.26	0.31	NA							
7-12	Male														
	1850	0.77	0.78	0.71	0.77	0.71	0.76	0.74	0.63	NA	0.51	0.57	0.60	0.59	0.59
	1860	0.80	0.80	0.87	0.78	0.84	0.74	0.75	0.53	NA	NA	0.76	0.75	0.65	0.64
	1870	0.71	0.76	0.74	0.73	0.67	0.72	0.67	0.74	NA	0.82	0.81	0.74	0.71	0.74
	1880	0.84	0.91	0.93	0.86	0.85	0.78	0.87	0.74	0.52	0.91	0.78	0.80	0.72	0.75
	1900	0.79	0.73	0.77	0.78	0.76	0.75	0.71							
	Female														
	1850	0.71	0.65	0.73	0.78	0.72	0.76	0.71	0.69	NA	0.66	0.52	0.58	0.56	0.55
	1860	0.76	0.75	0.80	0.81	0.76	0.64	0.65	0.81	NA	NA	0.78	0.70	0.66	0.64
	1870	0.65	0.70	0.76	0.67	0.68	0.67	0.68	0.67	NA	0.64	0.69	0.52	0.79	0.62
	1880	0.83	0.89	0.91	0.84	0.85	0.79	0.74	0.75	NA	NA	0.71	0.62	0.50	0.58
	1900	0.74	0.79	0.78	0.75	0.79	0.80	0.69							
13-14	Male														
	1850	0.64	0.86	0.76	0.59	0.65	0.52	0.56	NA	NA	NA	0.40	0.36	0.44	0.42
	1860	0.76	0.70	0.69	0.54	0.58	0.51	0.58	0.57	NA	NA	0.77	0.66	0.63	0.48
	1870	0.55	0.73	0.58	0.64	0.54	0.54	0.44	0.82	NA	NA	0.54	0.67	0.58	0.64
	1880	0.69	0.73	0.78	0.56	0.51	0.37	0.39	0.75	NA	NA	0.71	0.62	0.50	0.58
	1900	0.60	0.70	0.61	0.49	0.50	0.54	0.49							
	Female														
	1850	0.69	0.43	0.41	0.54	0.39	0.45	0.58	0.53	NA	NA	0.62	0.53	0.49	0.53
	1860	0.73	100.00	0.64	0.63	0.67	0.56	0.63	0.69	NA	NA	0.80	0.70	0.47	0.61
	1870	0.62	0.78	0.64	0.63	0.61	0.74	0.61	0.75	NA	NA	0.66	0.82	0.75	0.70
	1880	0.84	0.84	0.80	0.59	0.55	0.43	0.56	0.96	NA	0.76	0.76	0.75	0.62	0.69
	1900	0.56	0.71	0.82	0.50	0.47	0.52	0.55							
15-16	Male														
	1850	0.50	0.19	0.16	0.25	0.39	0.25	0.18	0.23	NA	NA	0.34	0.26	0.23	0.07
	1860	0.50	0.51	0.39	0.31	0.25	0.22	0.26	0.50	NA	NA	0.33	0.36	0.23	0.17
	1870	0.39	0.33	0.38	0.28	0.15	0.23	0.21	0.37	NA	NA	0.55	0.28	0.33	0.41
	1880	0.36	0.28	0.48	0.34	0.19	0.22	0.16	0.91	NA	NA	0.36	0.44	0.27	0.29
	1900	0.30	0.35	0.55	0.20	0.16	0.17	NA							
	Female														
	1850	0.37	0.29	0.46	0.17	0.31	0.22	0.20	0.36	NA	NA	0.34	0.22	0.10	0.09
	1860	0.44	0.45	0.33	0.25	0.14	0.20	0.24	0.50	NA	NA	0.34	0.25	0.13	0.15
	1870	0.35	0.51	0.41	0.26	0.20	0.15	0.26	0.39	NA	0.76	0.49	0.49	0.36	0.39
	1880	0.43	0.59	0.49	0.23	0.25	0.16	0.27	0.76	NA	0.44	0.36	0.39	0.34	0.38
	1900	0.29	0.39	0.31	0.18	0.15	0.31	0.02							

NA=N of 5 or less

Table 18 Adjusted Means MCA Analysis of School Attendance: Father-Child Birthplace

Age and Sex		FIRISH CNWA	FGER CNWA	FNWA-CNWA	FGER CGER	FIRISH CIRISH	FBLSO CBLSO	FBLSO CBLNO	FBLNO CBLNO	IT/ IT	IT/ NW	RS/ NW	RS/ NW
5-6	Male												
	1850	0.41	0.46	0.47	0.28	0.26	0.46	0.39	0.45				
	1860	0.45	0.31	0.33	0.16	0.50	0.37	0.37	0.37				
	1870	0.24	0.24	0.22	0.24	0.37	0.23	0.23	0.23				
	1880	0.41	0.40	0.36	0.35	NA	0.30	0.36	0.28				
	1900	0.35	0.30	0.25	NA	NA				NA	0.45	NA	0.36
	Female												
	1850	0.46	0.42	0.42	0.19	0.39	0.42	0.42	0.42				
	1860	0.37	0.32	0.33	0.33	0.26	0.34	0.34	0.34				
	1870	0.24	0.20	0.22	0.34	0.21	0.22	0.22	0.22				
	1880	0.36	0.39	0.33	0.31	NA	0.26	0.41	0.35				
	1900	0.27	0.21	0.26	NA	NA				NA	0.33	0.41	0.45
7-12	Male												
	1850	0.73	0.76	0.80	0.64	0.56	1.29	1.40	1.34				
	1860	0.82	0.77	0.79	0.56	0.80	0.79	0.79	0.79				
	1870	0.76	0.73	0.71	0.76	0.70	0.73	0.73	0.73				
	1880	0.89	0.88	0.82	0.90	0.78	0.78	0.81	0.77				
	1900	0.78	0.75	0.78	0.51	0.73				0.66	0.71	0.82	0.77
	Female												
	1850	0.73	0.76	0.80	0.66	0.49	0.76	0.76	0.76				
	1860	0.81	0.73	0.75	0.57	0.73	0.76	0.76	0.76				
	1870	0.72	0.73	0.67	0.65	0.77	0.70	0.70	0.70				
	1880	0.83	0.86	0.82	0.86	0.82	0.78	0.78	0.75				
	1900	0.71	0.75	0.78	0.59	NA				0.67	0.64	0.84	0.78
13-14	Male												
	1850	0.51	0.61	0.68	0.45	0.38	0.87	0.60	0.60				
	1860	0.60	0.55	0.63	0.36	0.58	0.60	0.60	0.60				
	1870	0.61	0.53	0.57	0.36	0.50	0.57	0.57	0.57				
	1880	0.64	0.41	0.59	0.28	0.61	0.65	0.58	0.60				
	1900	0.56	0.49	0.53	NA	NA				0.40	0.49	0.55	0.72
	Female												
	1850	0.62	0.57	0.58	0.51	0.37	0.56	0.56	0.56				
	1860	0.67	0.59	0.68	0.36	0.53	0.64	0.64	0.64				
	1870	0.60	0.55	0.65	0.26	0.67	0.61	0.61	0.61				
	1880	0.70	0.42	0.69	0.48	0.49	0.70	0.73	0.72				
	1900	0.52	0.36	0.59	0.02	NA				0.21	0.49	0.41	0.45
15-16	Male												
	1850	0.26	0.21	0.31	0.16	0.15	0.27	0.27	0.27				
	1860	0.33	0.23	0.40	0.10	0.20	0.34	0.34	0.34				
	1870	0.28	0.17	0.34	0.01	0.13	0.28	0.28	0.28				
	1880	0.25	0.16	0.29	0.00	0.20	0.35	0.39	0.45				
	1900	0.21	0.14	0.25	0.08	0.32				0.02	NA	0.16	0.25
	Female												
	1850	0.17	0.19	0.27	0.32	0.19	0.24	0.24	0.24				
	1860	0.27	0.29	0.35	0.12	0.19	0.30	0.30	0.30				
	1870	0.27	0.19	0.32	0.34	0.10	0.28	0.28	0.28				
	1880	0.29	0.06	0.40	0.12	0.20	0.41	0.43	0.39				
	1900	0.21	0.16	0.24	0.01	NA				NA	0.26	0.22	NA

Table 19

Adjusted Means MCA School Attendance Analysis

Property

Age and Sex		White						Black			
		NoProp	PProp	Rprop	RPProp	PMort	PFree	NoProp	PProp	RProp	PRProp
5-6	Male										
	1850	0.43		0.49				0.41		0.53	
	1860	0.33	0.40	0.40	0.41			0.17	0.31	NA	0.51
	1870	0.21	0.23	0.38	0.22			0.20	0.19	NA	0.24
	1900	0.27				0.38	0.37				
	Female										
	1850	0.42		0.42				0.30		0.42	
	1860	0.32	0.38	0.30	0.29			0.16	0.30	NA	0.31
	1870	0.19	0.25	0.27	0.22			0.17	0.22	NA	0.11
	1900	0.26				0.34	0.34				
7-12	Male										
	1850	0.75		0.81				0.60		0.79	
	1860	0.77	0.80	0.84	0.80			0.72	0.68	0.75	0.75
	1870	0.69	0.78	0.74	0.72			0.71	0.82	0.67	0.76
	1900	0.76				0.76	0.84				
	Female										
	1850	0.76		0.78				0.55		0.73	
	1860	0.75	0.79	0.71	0.73			0.67	0.73	0.79	0.78
	1870	0.70	0.72	0.69	0.68			0.70	0.74	0.43	0.71
	1900	0.75				0.79	0.85				
13-14	Male										
	1850	0.56		0.76				0.43		0.55	
	1860	0.55	0.57	0.68	0.71			0.67	0.54	NA	0.72
	1870	0.53	0.58	0.48	0.63			0.67	0.50	NA	0.63
	1900	0.48				0.67	0.76				
	Female										
	1850	0.55		0.60				0.53		0.70	
	1860	0.51	0.60	0.84	0.71			0.66	0.58	NA	0.80
	1870	0.54	0.69	0.58	0.62			0.73	3.87	NA	0.85
	1900	0.50				0.63	0.66				
15-16	Male										
	1850	0.23		0.39				0.41		0.53	
	1860	0.29	0.32	0.22	0.45			0.25	0.39	NA	0.29
	1870	0.23	0.32	0.26	0.32			0.33	0.66	NA	0.33
	1900	0.18				0.36	0.32				
	Female										
	1850	0.22		0.31				0.17		0.19	
	1860	0.27	0.28	0.36	0.35			0.23	0.22	NA	0.32
	1870	0.25	0.26	0.22	0.35			0.39	0.51	0.56	0.71
	1900	0.16				0.39	0.45				

Table 19A
Influence of Parental Property Ownership on School Attendance of Foreign-born Children, 1900, with Controls for Other Variables

		Predicted % Attending School			
		Age			
		5-6	7-12	13-14	15-16
Parents' Property Status:					
Males					
	Rents	0.32	0.75	0.46	0.07
	Own Mort.	0.42	0.73	0.69	0.35
	Own Free	0.41	0.85	0.68	0.32
Female					
	Rents	0.32	0.73	0.41	0.11
	Own Mort.	0.31	0.74	0.57	0.46
	Own Free	0.49	0.75	0.51	0.36

Table 19B
Influence of Parents' Citizenship Status on
School Attendance, 1900, with
Controls for Other Variables

	Predicted % Attending School			
	Age			
	5-6	7-12	13-14	15-16
Parent:				
Citizen				
Males	0.43	0.72	0.51	0.10
Females	0.27	0.74	0.49	0.25
Non-citizen				
Males	0.32	0.76	0.50	0.11
Females	0.33	0.67	0.43	0.16

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Table 20

Adjusted Means MCA School Attendance Analysis: Birth Order

Age and Sex		White Young.	Middle	Eldest	(a) Only	(a) Non-Ch	Ch	Black Young.	Middle	Eldest	(a) Only	(a) Non-Ch	Ch
5-6	Male												
	1850	0.54	0.44	0.33	0.37	0.48	0.42	0.40	0.49	0.32	0.24	0.43	0.40
	1860	0.40	0.40	0.33	0.15	0.34	0.37	0.26	0.25	0.20	0.23	0.27	0.26
	1870	0.22	0.25	0.19	0.22	0.24	0.23	0.26	0.17	0.09	0.32	0.25	0.23
	1880	0.38	0.30	0.23	0.29	0.31	0.38	0.40	0.35	0.15	0.33	0.34	0.32
	1900	0.33	0.33	0.20	0.17	0.16	0.29						
	Female												
	1850	0.38	0.48	0.32	0.39	0.40	0.42	0.33	0.32	0.30	0.25	0.39	0.35
	1860	0.39	0.38	0.25	0.19	0.40	0.35	0.27	0.20	0.16	0.28	0.18	0.23
	1870	0.18	0.29	0.29	0.08	0.19	0.22	0.16	0.21	0.14	0.13	0.22	0.15
	1880	0.33	0.33	0.29	0.35	0.36	0.36	0.35	0.35	0.28	0.44	0.32	0.36
	1900	0.27	0.32	0.20	0.22	0.33	0.28						
7-12	Male												
	1850	0.74	0.77	0.77	0.59	0.66	0.76	0.64	0.63	0.60	0.51	0.52	0.59
	1860	0.77	0.80	0.77	0.82	0.77	0.78	0.72	0.73	0.64	0.78	0.65	0.67
	1870	0.72	0.75	0.71	0.63	0.68	0.72	0.70	0.77	0.71	0.80	0.58	0.71
	1880	0.86	0.84	0.85	0.89	0.82	0.85	0.78	0.81	0.75	0.81	0.72	0.79
	1900	0.78	0.77	0.77	0.72	0.76	0.77						
	Female												
	1850	0.73	0.75	0.76	0.66	0.61	0.75	0.63	0.55	0.55	0.55	0.48	0.56
	1860	0.74	0.79	0.73	0.65	0.73	0.77	0.67	0.76	0.64	0.57	0.62	0.69
	1870	0.68	0.73	0.68	0.58	0.66	0.69	0.73	0.70	0.66	0.71	0.63	0.68
	1880	0.83	0.85	0.81	0.75	0.81	0.82	0.77	0.77	0.78	0.76	0.65	0.79
	1900	0.77	0.78	0.75	0.60	0.78	0.76						
13-14	Male												
	1850	0.48	0.63	0.64	0.39	0.45	0.59	0.35	0.44	0.54	0.30	0.26	0.46
	1860	0.54	0.58	0.64	0.79	0.54	0.59	0.60	0.67	0.58	0.50	0.48	0.62
	1870	0.51	0.60	0.58	0.40	0.49	0.56	0.67	0.59	0.59	0.83	0.51	0.65
	1880	0.58	0.58	0.53	0.59	0.43	0.57	0.52	0.66	0.58	0.65	0.51	0.64
	1900	0.55	0.53	0.55	0.42	0.43	0.54						
	Female												
	1850	0.31	0.56	0.63	0.37	0.44	0.56	0.41	0.50	0.64	0.58	0.28	0.48
	1860	0.53	0.62	0.71	0.73	0.38	0.64	0.64	0.65	0.68	0.61	0.43	0.65
	1870	0.63	0.60	0.59	0.75	0.37	0.60	0.87	0.76	0.67	0.80	0.61	0.73
	1880	0.69	0.63	0.60	0.61	0.37	0.68	0.68	0.70	0.80	0.53	0.50	0.74
	1900	0.54	0.52	0.54	0.55	0.38	0.53						
15-16	Male												
	1850	0.18	0.29	0.30	0.00	0.24	0.23	0.18	0.22	0.14	0.21	0.39	0.18
	1860	0.37	0.32	0.37	0.23	0.26	0.31	0.25	0.32	0.30	0.24	0.20	0.29
	1870	0.32	0.25	0.31	0.33	0.24	0.27	0.21	0.35	0.48	0.51	0.31	0.43
	1880	0.33	0.22	0.22	0.39	0.30	0.25	0.35	0.37	0.45	0.39	0.31	0.37
	1900	0.16	0.22	0.25	0.23	0.13	0.22						
	Female												
	1850	0.17	0.23	0.26	0.39	0.20	0.23	0.14	0.16	0.24	0.02	0.15	0.13
	1860	0.28	0.29	0.30	0.44	0.09	0.30	0.19	0.21	0.23	0.23	0.18	0.23
	1870	0.24	0.28	0.29	0.33	0.16	0.29	0.55	0.43	0.38	0.40	0.40	0.44
	1880	0.28	0.31	0.28	0.24	0.00	0.32	0.34	0.44	0.43	0.36	0.33	0.43
	1900	0.20	0.23	0.22	0.21	0.09	0.22						

Table 21

Adjusted Means MCA School Attendance Analysis:
Parents' Literacy

Age and Sex		Whites			Blacks		
		R&W	ROnly	Illit.	R&W	ROnly	Illit.
5-6	Male						
	1850	0.45		0.23	0.39		0.53
	1860	0.37		0.47	0.26		0.21
	1870	0.23		0.28	0.23	0.12	0.15
	1880	0.38	0.26	0.36	0.31	0.40	0.33
	Female						
	1850	0.42		0.36	0.31		0.31
	1860	0.34		0.45	0.23		0.17
	1870	0.22		0.25	0.19	0.19	0.12
	1880	0.35	0.18	0.43	0.39	0.38	0.30
7-12	Male						
	1850	0.76		0.76	0.57		0.73
	1860	0.79		0.88	0.71		0.70
	1870	0.73		0.78	0.76	0.73	0.66
	1880	0.85	0.83	0.82	0.81	0.83	0.70
	Female						
	1850	0.76		0.77	0.53		0.67
	1860	0.76		0.81	0.69		0.71
	1870	0.69		0.77	0.71	0.67	0.68
	1880	0.83	0.89	0.73	0.78	0.82	0.73
13-14	Male						
	1850	0.60		0.53	0.43		0.48
	1860	0.60		0.57	0.66		0.52
	1870	0.56		0.63	0.63	0.57	0.65
	1880	0.58	0.40	0.34	0.63	0.78	0.50
	Female						
	1850	0.57		0.39	0.54		0.55
	1860	0.64		0.44	0.63		0.69
	1870	0.62		0.52	0.75	0.84	0.76
	1880	0.64	0.57	0.49	0.74	0.75	0.65
15-16	Male						
	1850	0.26		0.51	0.18		0.23
	1860	0.34		0.34	0.32		0.27
	1870	0.27		0.35	0.39	0.36	0.40
	1880	0.26	0.07	0.07	0.36	0.71	0.40
	Female						
	1850	0.24		0.12	0.16		0.21
	1860	0.30		0.16	0.25		0.18
	1870	0.27		0.34	0.43	0.72	0.45
	1880	0.30	0.18	0.11	0.41	0.46	0.40

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Table 22

Adjusted Means MCA School Attendance Analysis: Occupations of All Parents Compared to Occupations of Parents of White Males Age 15-16

	All Parents					Parents of White Males Age 15-16				
Occupations	1850	1860	1870	1880	1900	1850	1860	1870	1880	1900
P&P	0.65	0.63	0.53	0.68	0.57	0.50	0.50	0.39	0.36	0.30
BUSEMP	0.61	0.64	0.62	0.70	0.60	0.19	0.51	0.33	0.28	0.35
MASTER	0.61	0.63	0.58	0.75	0.62	0.16	0.39	0.38	0.48	0.55
SKILL	0.61	0.61	0.57	0.63	0.55	0.25	0.31	0.28	0.34	0.20
SEMI-	0.59	0.63	0.54	0.64	0.55	0.39	0.25	0.15	0.31	0.16
UNSKIll	0.59	0.53	0.51	0.58	0.58	0.25	0.22	0.23	0.28	0.17
WOMEN	0.57	0.59	0.52	0.59	0.52	0.18	0.26	0.21	0.16	NA

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SCHOOLS, WORK, AND FAMILY LIFE IN AMERICAN HISTORY: A RESEARCH AGENDA

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In the 1840's Horace Mann, then Secretary of the Massachusetts Board of Education, asked manufacturers for their views on the value of a common school education. Those who replied all preferred schooled workers. However, their reasons had nothing to do with any special cognitive or technical skills. Rather, workers who had been to school, said the manufacturers, were more reliable, honest, punctual, and less likely to strike. Although early school promoters were eager to win the support of manufacturers, they had other objectives which conflicted with training docile and deferential workers. For they argued that schooling should promote economic independence and social mobility by instilling self control, self direction, and a will to achieve. In fact, two or three decades later employers and other social commentators began to complain that schools had destroyed the national taste for manual work and produced a superabundance of unemployable aspirants to white collar work.

Conflicting views about the relation between education and work have been a feature of educational discourse for a very long time. What role have schools played in shaping the labor force? Has a link between school and work been forged through the transmission of technical and cognitive skills or by the way schooling has affected personality, values, and habits? For generations employers have complained about the inadequate preparation schools have given to young people. Have these complaints reflected low levels of skill and marginal literacy or a more subtle problem, the development of attitudes that conflict with the organization of work? If the problem lies in habits and attitudes, where have young people learned them? Has there been something about the way school life is organized that transmits a message more powerful than the skills and content which teachers try to impart? Or do the attitudes of young people merely reflect what they have learned in their families, from their peers, and, now, through the mass media? Controversies about the relation between education and work involve not only questions about the impact of schooling on the way individuals behave but, as well, upon social processes. What effect has the vocationally differentiated character of secondary education had upon equality of opportunity and on social mobility? Although these questions have been asked in one way or another since the early part of the nineteent-century, their answer is by no means clear, and scholars disagree, sometimes quite sharply, on the relations between family background, educational achievement, and occupational attainment in both the past and present.

These are some of the questions which led us to undertake a large project on the relations between the organization of schools, work, and family life in Philadelphia between the early nineteenth century and, roughly, the First World War. The project began in September, 1979, and is now in its third and officially final year. Most of our work to date has been the collection of data, particularly the preparation of large, machine-readable files. We are only now starting the analysis of the quantitative data. Nonetheless, we can best illustrate our ideas about the direction that should be taken by research on the relations between education and social structure through a discussion of the way in which we have organized the research and the sources we have used.

Although we expect our research to contribute to the reformulation of general interpetations about the relations between school, work, and family, its value does not lie entirely, or even primarily, in its theoretical success. For, as we have thought about the questions we wanted to answer, we have been impressed over and over again by the relative empirical vacuum in which most debate about the historical role of education takes place. Despite the recent interest in the social history of education, ignorance about many basic issues remains monumental, and, as a consequence, we lack the hard demographic and descriptive data on which to build interpretations with confidence. It is this deficiency which our project will correct for one city, but we remain painfully aware that the task is still in its infancy, and our general message in this paper is to urge historians to get on with the systematic social inquiry into the relations between schools, work, and family life in times past.

There is no lack of models of educational development or of the relations between education and social structure. Hogan has reviewed these critically elsewhere. Here we simply want to begin by pointing to three frameworks which guide our general approach to the issues. First, we assume the existence of systematic relations between schools, the economy, and families. Some of these relations are structural, for example the way in which pedagogy and classroom management sometime habituate young people for the workplace. Other links are institutional as in the use of public schooling to channel students into a differentiated and stratified labor market or as a means of promoting social mobility.

Second, we proceed from the premise that the goals of schooling often have conflicted with each other. Parents, educators, and businessmen often have hoped for different outcomes from the schools. One example is the tension between deference and achievement as goals of mind-ninteenth century schoolmen. Another is the conflict between citizenship and vocational training that has permeated American education since the Progressive period.

We believe that conflicts between the purposes of schooling have generated continual pressures for change within the system itself. At the same time conflicts between the organization of schooling and the characteristics of social and economic life have generated other pressures for change. Some of these conflicts have been economic, the apparently anachronistic quality of the curriculum, for instance; others have been social, such as the continuation of racial segregation within a society at least nominally committed to integration. Sometimes, too, conflicts arise from the failure of schools to foster family goals. Here a current example is the decreased ability of colleges to assure their graduates a well paying, high status job.

The point is that the relations between schools, work, families, and social goals never are static. Sometime conflicts arise within the system itself, as between the dual goals of schools, sometime from the mismatch between schooling and some aspect of economic, social, or family life. Rarely, in fact, do these conflicts exist in isolation. Instead, they overlay and interact with each other at the same time. But -- and this is what we wish most to stress -- it is conflict that generates pressure for educational change. Change is not the result of smooth, functional adaptations to new circumstances or the result of enlightened, rational planning. Rather, change is a messy process, always embedded in conflict, or better, multiple conflicts fought by shifting coalitions.

Our argument is not that conflicts have no recurring patterns or that they lack relations to social structure. Indeed, the basic and enduring divisions in American social structure always are reflected in educational conflict, for classes, ultimately, want different things from the schools. The problem is how to conceptualize the connection between social class interests and educational change. This brings us to the third perspective that informs our work.

What needs to be explained is change in both educational organization and education-related behavior. For instance, in the late nineteenth and early twentieth -century the shape of secondary education changed dramatically with the introduction of differentiated curricula and junior high schools. At the same time the proportion of young people attending secondary schools increased greatly. Most of this increase, given its size, had to come from the children of the working class. Who changed school systems across the country? Why? Why did working class children begin to attend more?

It is crude to assume an automatic correspondence between the reasons why school boards across the country changed the nature of secondary education and the reasons that working class children began to stay longer in school. We are unwilling, without explicit evidence, to believe either that families were reluctantly forced to send their children to school longer or that they passively accepted the new ideology of educational expansion and differentiation. Rather, we prefer to assume that ordinary people usually assess their circumstances intelligently and act reasonably. The problem of course is that nobody is free to act without constraints, and it is the reasons that people choose as they do among the limited options available that historians should seek to discover.

To use a crude metaphor one can think of the analysis of class related issues in educational change as a game whose rules always are changing. Call the game either Success or Survival in America. The working-class by and large does not make the rules. The shape of the board on which the game is played and the rules largely are the product of people with power and resources. Sometimes they meet with resistance, as in the resistance of labor in strikes or in struggles over the control of the workplace in the late nineteenth and early twentieth-century. To what extent working-class resistance shaped the educational aspects of the game remains unclear. But it is clear that the players have choices and, by and large, that people make choices, including the use of education, partly according to their class situation. Educational choices, it must be stressed, are not made in isolation. They are part of family strategies which include decisions about fertility, property, and work as well as schooling. In the early twentieth century working class family strategies began to change as fertility dropped, homeownership increased, and school attendance lengthened. These new strategies were appropriate responses to a game whose rules had changed with, for instance, the development of welfare capitalism, the attempt to curtail labor turnover in industry, and the reduced need for child labor that accompanied the application of new technologies. Educational change played an important role in these redesigned business and industrial strategies.

However, in at least one important respect the game metaphor breaks down. Neither business and industry, on one side, nor ordinary people on the other were free to implement the changes that they wanted. Unlike the pieces on a board the elements of public education could not be moved around and reshaped at will. Aside from fiscal constraints and the connection of education with state and local politics, the pieces in the system were largely people. By the turn of the century public educational systems within cities had become bureaucracies. At the state and national level organizations of teachers and administrators actively promoted the interests of their members. Indeed, educators' desires for career opportunities, independence, and security had exercised a major influence on the development of public education during the third and fourth quarters of the nineteenth-century. Thus, educators had an agenda of their own and successfully resisted changes which they thought undermined their position. For instance, in Illinois they managed to defeat the Cooley Bill which would have established an independent system of vocational education outside of the regular public school system. In Massachusetts and Illinois they fought successfully to incorporate kindergartens into the public educational system. Thus, the new educational options offered working class families grew out of a complex set of interests and reflected a compromise rather than the pure realization of any one set of goals for the structure of public schooling.

The emergence of educational change from conflict, the interpretation of educational behavior among ordinary people as an element of a family strategy, and the alteration of educational structure as part of both the changed social relations of American industrial capitalism and the aspirations of professonional educators: these constitute the general framework in which we approach our study of the relations between schools, work, and family life in Philadelphia.

One way in which we think of the research task is to divide the work into the attempt to explain three things: structural developments and characteristics; individual behavior; and outcomes. We hope to describe and explain a number of the key structural characteristics of work and schooling. With work we set out to study the rate and nature of industrial and commercial expansion; changes in occupational structure; internal characteristics and control structures of workplaces; skill requirements; changes in the educational requirements of jobs; how jobs were learned; and the relationship between productivity and educational achievement.

With schooling our focus is the absolute and relative rates of growth in school enrollment by educational level and age cohort; the differentiation of the educational system into different types of schools and different kinds of curricula; the introduction of standardized curricula and evaluation procedures; the characteristics of classroom organization and pedagogy; the introduction of extracurricular activities; and the training and certification of teachers. One research project, certainly, will not be able to produce definitive or thorough descriptions and explanations of all of these characteristics of work and schooling. Indeed, given the nature of the sources and the emphases that have developed during the course of the research coverage will be uneven, but we hope to be able to say something about most of them, even if it is only to point to promising lines of further study.

The key individual behaviors on which the project focusses are school attendance and achievement. In particular, we want to connect these with the class origin, ethnic background, and family circumstances of young people and to understand education as one element in the way in which men and women from different backgrounds negotiated their transitions to adulthood. As we shall observe shortly, the project has an extraordinary amount of data with which to study these issues.

It is most difficult to investigate educational outcomes. We would like to know what impact education had upon people, especially upon their adult occupations. We also would like to be able to enter the debate about the relation between schooling and the structure of inequality, the sources of social and political legitimacy, and the nature of work itself. We have a modest amount of data about the adult occupations of high school students. As for the broader social impact of education, our conclusions will emerge from the interplay between our empirical results and theory.

It should be apparent that the project demanded a complex design which permitted shifts among a variety of perspectives and facilitated making links between them. Thus, we divided the actual work into five perspectives. By and large each perspective corresponds fairly closely to major data sets. The perspectives are: the family economy, the individual life course, the demography of school and work, organizational innovation, and social ecology.

The Family Economy

All families have a cycle, a structure, and an economy. All go through a series of phases from formation through dissolution. All consist of individuals occupying well-defined statuses. And all must earn the means for their subsistence and allocate resources among family members. The task for historians is to show the inter-relations between these three characteristics of families, to trace their changing configurations over time, and to show their differentiation by class, ethnicity, and other factors.

The most common theme in discussions of the family economy is the separation of home and work. In this view the family economy dissolved as place of work and place of residence became distinct. Leading this momentous change was the middle class which pioneered a new family form focussing on the socialization of children and the celebration of domestic values. There are at least two problems with this version of family history. First, the first people to live away from their place of work were wage-workers, not proprietors or professionals because in cities laborers and other married wage workers usually lived apart from their workplace. In fact, many businessmen, manufacturers, and professionals combined their place of work and residence even well after industrialization had begun to dominate local economies. Even more, the standard interpretation neglects the fact that all families always must have an economy. All of them must deal with the acquisition and distribution of resources in order to survive. Thus the framework for the study of family history should not be the decline of the family economy but, rather, its changing nature over time.

There are a number of important questions about education that can be studied through analysing the inter-relation between family cycles, structures, and economies. Families have had to balance their needs for income against their desires for consumption. At particular points in family cycles the strain between income and consumption is greatest: for instance, when all children are young. How did families compensate for economic strain at different points in their histories? Did families with young children, for instance, take in boarders or relatives who could provide an extra income? Were families more likely to send older adolescent children to school when there were no more young children in the household or when there were others in the family who could supplement its income? How did a family decide when to forgo the income that an employed child could contribute?

Decisions about school probably reflected broad family strategies about social mobility. For example, in early twentieth-century Chicago Italians and Poles sought to establish and maintain a culturally defined level of economic welfare through the acquisition of property. Hence they took their children out of school relatively early and used their income to buy property. By contrast, Jews and Rumanians emphasized the social mobility of individual children, as opposed to the family unit, and kept them longer in school. One consequence is that these two groups had lower rates of homeownership than either Poles or Italians.

Clearly, the family economy mediates the relation between school and work. The notion of work, we must stress, should include activities within the home. Domestic work or housekeeping surely is an important type of work, albeit one not rewarded with wages. It is also a form of work with important implications for educational behavior because the expectations of families for their daughters shaped their willingness to allow them to remain in school. Where daughters were expected to play a major role with housework and child care they left school earlier. The assumption that a woman's place was in the home, however, did not always act to retard the school attendance of girls. For in the latter part of the nineteenth-century many educators and social reformers, alarmed at what they took to be declining domestic skills among working-class and immigrant women, introduced domestic science into school curricula.

There are important methodological problems which affect the analysis of the relations between family cycles, structures, and economies. First is the definition of the phases of the family cycle. In this project we are using stages defined by Katz for his study of Hamilton, Ontario, and Buffalo, New York. These are based on the age of the mother and divide families into those that are young and newly formed; those in early and late mid-cycle when the wife is still of child-bearing age; and those in which the wife is older than 45, the conventional age used to demarcate the end of the child-bearing years. Within each stage families are further subdivided into those with no children, those with only young children, those with at least one male child 15 or over, and those whose only children at least 15 years old were girls. It was important to identify families with a son at least 15 years old because they were the ones with a potential for additional income since boys worked outside the home much more often than girls. Interestingly, though, girls worked more often in families which lacked a working-age son.

We also will ask whether at some point in their cycles families were particularly likely to have boarders, relatives, or other non-conjugal members living with them. Katz began his study of Hamilton assuming that families experiencing their periods of greatest strain would be the most likely to have additional members who could provide extra incomes and that teenage children would be more likely to attend school when there were other wage-earners in the household. As it happened, neither of these hypotheses was valid. There was almost no relation between family cycle and structure or between family structure and school attendance in Hamilton during its early industrialization. Nor, at mid-century, did any relations between them exist in Buffalo, New York. This lack of relation existed throughout the class structure and in each ethnic group. Whether it also characterized families in Philadelphia is one of the questions we are asking.

In order to examine family economies in his study of Hamilton and Buffalo Katz constructed indexes expressing the relation between the work potential and consumption demands within families and between their actual wage earning patterns and consumption demands. Consumption demands and work potential were measured by the age of family members; wage earning patterns were measured by inferred participation in the wage-labor force. Separate indexes were derived for families and for households, that is, for conjugal families plus their extensions. Indexes, of course, varied greatly across the family cycle, but they did not vary with family and household structure. Once again there appeared little relation between the balance of income and need within families and their composition. However, some quite different class patterns did occur. Working-class families with teenage sons had a much higher wage-consumption index than business class families. They were very likely to send their sons to work while the business class sent theirs to school. With class controlled, there was no variation among ethnic groups. Again, we shall ask whether similar relations existed in Philadelphia.

The sources for tracing the relations between family cycles, structures, and economies are manuscript censuses. In Hamilton Katz used the Canadian censuses of 1851, 1861, and 1871; in Buffalo he used the New York State Census of 1855. In Philadelphia we are using samples of families from the 1850-1880 federal censuses taken by the Philadelphia Social History Project. To this we are adding a new sample from the 1900 census (which includes number of months each person had attended school). It is the size and complexity of these samples that has made the recoding of variables, the application of classification schemes, and the preparation of files so time consuming and expensive.

Two aspects of classification that haunt all analyses which touch on social structure are the grouping of occupations and the defintion of class. Katz has written at length on both topics, and we are using classifications that he has employed in his studies of Hamilton and Buffalo. Although we do not wish to dwell on these issues here, it is important to stress that our notion of class is distinct from stratification. In our analyses classes are not more or less arbitrary levels in a hierarchy. They are based, rather, on social relations and express the fundamental social groups that derive from the way in which material life is reproduced. As such they are dynamic, constantly interacting with each other.

In the study of class, indeed in the study of occupation as well, one methodological point must be emphasized. Many men on censuses have a simple artisanal occupational designation such as shoemaker, tailor, carpenter, blacksmith. It is not possible to tell from the census alone whether they are self-employed or wage-workers. Yet the question is imperative because their status determines their class position. Indeed, in his study of Hamilton and Buffalo Katz found that masters and workers behaved quite differently on a variety of matters, including whether they sent their older children to school. Preliminary results in Philadelphia point to similar patterns there as well. Thus, it is crucial to try to make the distinction, to identify those artisans who own their own businesses. We have done this through the use of city business directories, which, although imperfect, are a generally reliable source for this purpose. The process of identifying masters is time consuming and tedious but we cannot over-emphasize its importance for the historical study of social structure.

THE INDIVIDUAL LIFE COURSE

The human life course is only partly determined by biology. It also is a product of culture and history. Aside from birth, maturation, aging, and death, the shape of human lives has varied not only between cultures but, over time, within Western culture. Even biological events, such as age at menarche or average life span, vary with historical conditions. For our purposes the most critical phase of the life course is adolescence, which we hold to be a modern invention. The historicity of adolescence is of great importance for two reasons. One is the close connection between ideas about adolescence and the development of schooling. The other is our contemporary habit of accepting adolscence as fixed or, almost, trans-historical. As a consequence we tend to think of changing or reforming the institutions through which adolescents pass. We do not, nearly often enough, consider whether the shape of the transition to adulthood itself might be different or whether, despite our missing it, it has begun to change by itself.

In a rough sense the history of young people since the seventeenth or eighteenth centuries has had three major stages. The first should be called Youth. In this phase, which lasted until well into the nineteenth-century, young people lived at home, sometimes attending school, until they began to work. They then left their parents' homes and lived in a series of other households as quasi-family members until they married. As far back as historians have been able to find sources, this practice of sending children to live with another family for a number of years was widespread. In the Early Modern Period young people went into other homes as servants or employees, a practice, incidentally, which cut across classes. By the early nineteenth-century with the development of capitalism apprenticeship had eroded and young men were unlikely to live as servants. However, they continued their customary pattern of living with other families, only now as boarders or lodgers. Young women, meanwhile, still frequently were resident domestic servants. These young people living with families other than their own were in what Katz has called a state of semi-autonomy, neither entirely independent of the influence of the household head nor completely dependent on their parents. This stage of semi-autonomy was quite lengthy because young people probably left home around the age of 16, and men did not marry until about the age of 27 and women, on the average, until about 23.

Adolescence as we know it began with a change in the relation between home and work. In the early industrial period young people began to live at home during their early working years, remaining with their parents much longer, probably, than ever before in history, longer, on the average, than today. The reasons why young people began to stay at home longer are not clear, although the practice was ubiquitous throughout the social structure. Very likely it reflected a combination of structural and cultural influences. Prior to the development of cheap mass transportation at the end of the nineteenth-century people had to live within walking distance of their work. When most workplaces were small and scattered, young people probably very often had to take work which was not within walking distance of their parents' homes. Later in the century the development of large factories with jobs for young people brought work within walking distance of many more young people's homes and made it possible for them to live with their parents even after they began to work.

But there is more to the story. In the same period writers addressing more affluent parents began to argue against boarding schools and to support local high schools partly on the grounds that young people should live with their parents. Given the support for high school development in these years it is clear that moderately affluent parents sought a way of educating their children and keeping them at home. Indeed, Katz and Davey have shown that in Hamilton, Ontario, the school attendance of business class teenagers increased during early industrialization. At the same time the school attendance of working class teenagers peaked during the depression of the late 1850's and then declined as new industrial opportunities opened. Both working and business class children, however, began to live far longer than before in the homes of their parents.

Young people who attended school were directly dependent on their parents. Those who worked gave most of their income to their families. Hence, they, too, remained dependent while they lived at home. Thus, the increased time that children lived with their parents initiated a period of prolonged dependence which, increasingly, was reinforced and shaped by age-segregated institutions. This prolonged, institutionalized dependence constitutes the social definition of adolescence that has persisted until our own time. Indeed, the new psychological theories of adolescence, such as G. Stanley Hall's, appeared only after the demographic transition to prolonged dependence was well underway.

By the late twentieth-century a new stage in the lives of young people had begun to emerge. For want of a better term it might be called Post-Adolescence. Adolescence was marked by a relatively long spread between certain key life events, such as starting work and marriage, and by relatively little overlap between them. The key elements in the transition to adulthood - leaving school, starting to work, marrying, establishing a household - all occurred in a reasonably well-defined sequence and were contingent upon each other. By 1970, however, the spread between the initial age of the various stages in the transition to adulthood had shrunk. And, as the transition became more compressed, it lost much of its sequential and contingent character as events within individual lives often overlapped. It is this new, more compressed, less sequential and contingent pattern that we call Post-Adolescence.

It is clear that the older pattern of adolescence was in place by 1880 and that the shift to Post-Adolescence had begun before 1970. However, just when and why the shift occurred and how the timing of changes in the transition to adulthood varied by sex, class, and ethnicity remain obscure. This is a major question which we are trying to answer through a systematic study of the ages at which young people left school; when they left home; where they dwelled when they moved away from their parents; when they began to work; when they married; and where they lived when first married.

Once again our sources are the manuscript censuses of 1850-1900. With these we can look systematically at the residence, household status, employment, school attendance, and marital status of all young people in the sample. Prior to 1880, unfortunately, we cannot determine the ethnic background (defined as parents' birthplace) of children who did not live with their families. Nor do we know the occupations of the fathers of young people who did not live with their families. Nonetheless, we can chart the most important patterns in the transition to adulthood and show how they changed over time.

Katz and Davey have used the manuscript census to trace the transition to adulthood in Hamilton, Ontario, during its early industrialization. They showed both how the age of leaving home increased and the way in which leaving home, leaving school, starting to work, and marriage related to each other. They also showed how these patterns varied by sex, class, and ethnicity and why changes took place during early industrialization. Their analysis was based on descriptive statistics, and we are replicating it for Philadelpha.

Modell, et. al. measured five key transitions in the life-course of young people using the 1880 Philadelphia Social History Project sample of the city's white population and 1970 census data. They examined the inter-relation of these key events in terms of five dimensions which they called prevalence, timing, spread, age congruity, and integration. Their analysis showed important changes during the period, but it could not show exactly when they began or the differences between ethnic groups and classes. Modell, who is also a member of our project, is refining the measures used in the earlier study and applying them to the 1850-1900 samples. As much as possible his analysis will be differentiated by sex, class, and ethnicity.

THE DEMOGRAPHY OF SCHOOL AND WORK

The demography of school attendance is a familiar but still vital issue. A number of historians have made important individual studies of towns, cities, and schools. Katz and Davey examined school attendance during the early industrialization of Hamilton, Ontario, using manuscript census material which they analysed with both descriptive and multivariate statistics. Davey did an intensive study of school attendance at one key school in the city. Joel Perlman recently finished a major study of school attendance in Providence, Rhode Island. Kaestle and Vinovskis studied attendance in some Massachusetts towns during the middle part of the nineteenth-century. All of these studies have pointed to important connections between school attendance and social structure, but they disagree about a number of important issues, such as the relative importance of class and ethnicity, the role of family structure, and the relations between attendance and industrialization. In part these disagreements reflect theoretical differences about the nature of social structure and social change. In part, however, they also reflect limitations of the data bases.

Our data base for the analysis of school attendance is unusually rich. It encompasses a much longer time frame than any previous comparable study; it combines data from a variety of sources; and it focusses on one city during the course of its evolution from an early nineteenth-century commercial center to a complex industrial city in the early twentieth-century, and it combines both aggregate and individual level analysis.

The aggregate analysis includes school enrollment, average daily attendance, length of the school year, and two measures of educational achievement. First is a measure of changes in the educational attainment of cross sectional age cohorts at different points in times (what economists call educational stock). Second is a measure of changes in the educational attainment of successive natural or longitudinal age cohorts at ten year intervals. By relating educational attainment to various measures of social and economic change it will be possible to test the major theoretical explanations of the expansion of schooling: modernization theory, status competition theory, social control, and a variety of Marxist positions.

Our analysis of school attendance will ask a number of the obvious questions about the connections between attendance at various ages and at various types of schools and class, ethnicity, sex, and family structure. We will follow the methods developed by Katz and Davey in their earlier work, adapting them to the Philadelphia data. We will, however, also be able to ask more precise and subtle questions. For instance, Perlman found important links between birth order and attendance in Providence, Rhode Island. Was there a trade-off within families? Was it necessary for some children to work in order for others to go to school? If this was so, was it the older children who worked and the younger ones who attended school? In Buffalo, New York, Stern found a close association between adolescent school attendance and fertility. Families with fewer children sent a greater proportion of their adolescent sons and daughters to school. School attendance and fertility, thus, were two aspects of a new family strategy. This, again, is an idea which we will test. Even more, by combining records from individual schools with records from the census we can examine the variation in the student body of different types of schools and ask questions such as: was there anything distinctive about the artisans who sent their daughters to Girls High School? That is, we will be able to look for systematic differences in family strategies within as well as between classes. Where we have information on the internal history of individual schools, most notably the key secondary school for boys, Central High School, we will look for connections between shifts in the demography of the student body and changes in curricula.

Our analysis of school attendance is based both on the manuscript censuses and on the registers of individual schools: Central High School, the High School for Girls, Central Manual Training School, the Philadelphia Trades School, William Penn High School for Girls, Jefferson Grammer School, Washington School, Comegys School, Wolf School, and Penn Charter School. These registers vary greatly in the information they contain, but in each case they permit an analysis of the basic demographic characteristics of the student body. In some cases, including Girls High School and Central, the records include measures of achievement, either examination scores or letter grades; some, such as Jefferson, have detailed comments about why students left school. We have taken the records from four schools -- Girls, Central, Jefferson, and Wolf -- and traced students listed in census years back to the manuscript censuses. It is this long and arduous task that enables us to construct a rich portrait of student family background. The central limitation of our data set is that it includes no Catholic schools. As far as we can determine, there are no existing registers from Catholic schools in late nineteenth and early twentieth-century Philadelphia. One other limitation is the absence of detailed analyses of the private trade schools which started in the late nineteenth-century. Records from these do exist, but we did not realize their central role in the city's educational structure until after the research began. With funds from another project Hogan and Professor Walter Licht will examine some of these schools. It seems clear that the private trade and commercial schools were linked much more directly to the world of work than were the public schools, even those offering vocational education.

Understanding the links between schooling and employment requires answering a number of questions about the demography of work. This is the most difficult empirical aspect of the project. Historians only now are starting to study the labor force of individual firms in detail, and, despite the widespread recent interest among labor historians, little is known about how people were hired, the criteria used in various types of industries, how work was learned, or about promotion and the nature of careers within firms. All of these are matters of great historical significance. Work on social mobility in the last decade has made clear that movement between classes was quite limited. No one can now reasonably expect to discover very many skilled manual workers moving into white collar or managerial positions. Still, there was a great deal of movement within the working class, not only between firms but within them as well.

One of the ways in which industrialization changed the nature of work was to introduce elaborate ladders within individual firms. Although all of the jobs were within the working class, the levels of pay and responsibility between them varied greatly. These firm-level hierarchies held out the prospect of at least a modest career within the world of manual work. But historians know almost nothing about how higher levels were filled. Were workers usually hired from outside the firm? How often were people promoted internally? What criteria did education play in the job level which people attained within the working class? These questions, which form the next frontier for social mobility studies, are equally important for our analysis of the relations between work, schools, and families.

Because so little data exist about the demography of the workplace, we have had to devote a major effort to simply finding relevant information. We canvassed all of the historical archives in the city and contacted most of the individual firms that have been in existence in Philadelphia since the nineteenth-century. We found useful data in about seventeen of them. At the same time we discovered a great many relevant sources scattered in other places. These include: early theses done in schools of education which trace careers of students; various studies done by civic and university groups; reports of factory inspectors and other government officials; discussions in periodicals; and one remarkable data set. That is a study done by Gladys Palmer of the Wharton School which traces the occupational history and educational background of a sample of 2500 workers born between 1860 and 1920. In addition, we are reanalysing the manuscripts of the manufacturing censuses between 1850 and 1880 coded by the Philadelphia Social History Project. Our project's resources will not permit more than a preliminary analysis of the firm level material we have found. But, taken together, the sources on work should permit us to start drawing a much more detailed picture of employment than now exists.

All of the research we have done points to the importance of describing the labor market in great detail. Clearly it seems that the extent and nature of job opportunites, more than anything else, governed the length of school attendance and shaped the transition to adulthood. Working class boys usually left school as soon as they could get jobs. Whether those jobs were the first steps on a career within the working class or varieties of dead-end "boy labor," as described for England by Gareth Stedman Jones and for America by Joseph Kett, is not at all clear. But the attraction of wage-earning itself is unmistakable.

ORGANIZATIONAL DEVELOPMENT AND INNOVATION

Our fourth perspective is organizational development and innovation. Who sponsored or opposed educational innovations and why? What was the character of the process of organizational inovation? Did innovations reach their intended clientele? What were the politics of bureaucratization? These are among the basic questions we need to study in order to assess the nature of educational innovation and its relation to work, class, and family.

To answer these questions we are concentrating on six aspcts of the process of organizational development and innovation in Philadelphia. They are: the creation of a public school system during the 1830's; the system's expansion and its relation to private and parochical schools; the politics of curriculum change; the timing and significance of pedagogical changes in methods of motivation, discipline, and instruction (including the feminization of teaching); the introduction of structural changes (in particular, graded classrooms and graded schools) and the formalization of procedures (such as promotion and hiring); and the characteristics of school governance, particularly the politics and demography of school boards and patterns of bureaucratization.

Our analysis of innovation by and large proceeds from the obvious sources: school board reports and minutes, newspapers, pamphlets, and other primary sources. What these sources usually do not show is how change took place within individual schools. Fortunately, one superb source, the faculty minutes of Central High School, will enable us to trace the process of innovation in the city's key secondary school over almost a century. (That story along with an analysis of other issues in Central's History and a study of its demography will appear in David Labaree's dissertation.)

As we have pursued these sources,we have focussed on three broad issues. One is the politics of organizational innovation. The question is not only who supported or resisted change but what was the nature of political conflict: ethnic and religious, class, or pluralist, for instance? As we argued earlier, educational change should be understood as the result of compromises between different, often contending interests. Some of these are external to the educational system. Examples are the goals of social classes, political parties, or business interests. Others spring from within the system and reflect competing modes of authority, structural tensions, or the ambitions and problems of practicing educators. The goals of groups outside the system are easiest to establish; the aims and activities of those within are the hardest. Thus, the importance of the faculty minutes at Central High School lies in their illumination of thhe way in which educators themselves originated, resisted, modified, or accomodated to demands for change.

The question of politics leads directly to another issue: the character of schools as social organizations. Historians have largely ignored the relatively rich theoretical literature on schools as social organizations and focussed exclusively on bureaucracy. But schools are more than bureaucracies. Indeed, in some ways their peculiar organizational history and structure limit the scope of bureaucratization. Schools have unusually complex authority structures because they involve varying mixes of accountability, bureaucratic hierarchy, and professional autonomy. The theoretical literature on schools as social organizations can help historians move towards a more complex and nuanced account of the relations between centralization and bureaucratization. At the same time most sociological theory remains uninformed by history. (The work of Bidwell and Dreeben, however, is a notable exception to this generalization.) As a consequence, most theory gives very little sense of how schools as organizations actually develop over time and fails to unravel the complex, shifting relations between schools and their contexts, clients, and staffs.

Finally, there is the question of the structural and institutional links between schooling, the labor market, and the workplace. These assume a variety of forms: for example, a curriculum which stresses practical and useful education, classroom procedures which embody important ideological messages, vocational guidance, techniques of motivation and discipline, and so on. Some of these link the school directly to the workplace, others to the labor market. Clearly, historians need to understand a great deal more about both the organization of work and the history and composition of the labor market before they can fully grasp the signficance of major developments in the history of education. No one, for instance, has so far tried to join the differentiation of secondary education and the introduction of vocational guidance to the stratification and differentiation of the labor market in the late nineteenth-century. Nor has there been more than the most preliminary work on the private trade and business schools which have flourished in cities for more than a century and have often mediated the transition from public school to work.

SOCIAL ECOLOGY

By and large the unit of analysis for most of our project is either individuals or families. To some extent that focus is modified by our concern with innovation: the way in which change occurred within the system. However, one other important focus is the individual school. Schools served particular neighborhoods, and their social and ethnic composition differed markedly. Today, we would expect schools to be affected by these variations in their student body. Factors such as overall achievement levels or rates of absence are two examples. We also might expect to find variations in the resources available to different schools. Despite the Coleman Report, poor people long have suspected that schools in wealthier districts receive more money, better teachers, and newer equipment. Whether this is the case today and to what extent it happened in the past remain open issues.

Modell has asked some of these questions in his analysis of school expenditures and suburbanization in late nineteenth and early twentieth-century Philadelphia. He found surprisingly little association between the social composition of districts and school expenditures. But to fully grasp the connections between social ecology and educational resources it is necessary to gather data which cover a longer time span and incorporate more variables. Within Philadelphia it is possible to construct a year by year series showing pupil-teacher ratio, per-capita student expense, the ratio of average daily attendance to total enrollment, and the rate of teacher turnover for each school in the city since the late 1830's. The sources are the annual reports of the Board of Education. Schools then can be characterized in terms of the neighborhoods which they serve, and relations between changes in social ecology and educational resources may be studied with great detail over a very long time period. We had hoped to undertake this sort of ecological analysis, but it is the aspect of our plans with which we probably will be able to do least in this phase of the work.

There is one important ecological issue which we can, however, study in detail for one year: namely, the effect of neighborhoods on individuals. The issue is the relative weight of family or ethnic values and peer influence on behavior. We start from the observation that the behavior of children of immigrants born in North America differed markedly from their children born abroad. This is true, certainly, for fertility and school attendance. The distinctions between people who were born in North America and those who immigrated, even as youngsters, were clear in Katz's study of Hamilton, Ontario, in Stern's work on Buffalo, and they are appearing in the preliminary analyses of Philadelphia. All of this points to the importance of early experience in shaping behavior. For example, one might imagine that the school attendance of children of Irish immigrants would be different if they lived in predominantly Irish districts than if they lived in neighborhoods dominated by native Americans. For technical reasons we can ask this question only for 1880, but in that year we will be able to assess the influence of the ethnic composition of each youngster's immediate neighborhood (an area about a block and a quarter square) on his or her school attendance.

....

....

Although we are pursuing all of these issues vigorously, we have few definitive answers now, and this, in a very real sense, is a paper without a conclusion. Rather, it is an exhortation to systematic study and an illustration of issues, data, and approaches which will advance the analysis of the relations between schools, families, and social structure. It would be unrealisitc to expect very many people to undertake projects of the size and scope of the one described here. Indeed, the recent massive cutback in funding for social science research makes another undertaking of this size almost inconceivable for the immediate future. But large amounts of money are not necessary for worthwhile research. Within each of the perspectives we have described important work can be done on a modest scale. The important point is to orient research around a set of common concerns, to set individual studies within a larger frame, and to be self-conscious about method and theory. In that way research in the field can be directed to the areas most in need of study, scholars can learn from each other, and the result can be at least a moderately cumulative increase in knowledge - or, more accurately, a cumulative decrease in our vast ignorance - about the interconnections between schools, families, work, and social structure in American history.

Note on sources

In the interests of space we have not documented the argument in this paper with references to historical and theoretical literature. The earlier work by Katz to which reference is made is found in Michael Katz, Michael J. Doucet, and Mark J. Stern, THE SOCIAL ORGANIZATION OF EARLY INDUSTRIAL CAPITALISM (Cambridge: Harvard University Press, 1982), which also contains references to the relevant historical literature. The earlier work of the Philadelphia Social History Project is discussed in Theodore Hershberg, ed., PHILADELPHIA: WORK, SPACE, FAMILY, AND GROUP EXPERIENCE IN THE NINETEENTH-CENTURY (New York: Oxford, 1981). References to the theoretical literature and a discussion of the issues which it raises is in the grant application for the project which this paper describes ("The Organization of Schools, Work, and Family Life in Philadelphia, 1838-1920") which may be obtained from the National Institute of Education.

Working Paper No. 5

THE PEOPLE'S COLLEGE:
A SOCIOLOGICAL ANALYSIS OF THE
CENTRAL HIGH SCHOOL OF PHILADELPHIA, 1838-1939

DAVID FLEMING LABAREE

A DISSERTATION

in

SOCIOLOGY

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Supervisor of Dissertation

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1983

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INTRODUCTION

> It is the School of the Republic -- it is
> emphatically the School of the People...
> -- Thomas Dunlap, 1851

The Central High School of Philadelphia has never been an ordinary school. Founded in 1838, it was one of the first public high schools in the country. For the next 50 years it was the city's only public high school for boys, and today it is still considered the best. Frequently referred to as the "people's college" during its early years, Central in 1849 was given the authority by the state to grant college degrees, and it has exercised this authority ever since. For more than 140 years its alumni have occupied important positions in the city, and at least 70 of them are listed in the Dictionary of American Biography.

Central, therefore, was and is a far from typical high school. But during the nineteenth century, there was no standard for this new form of schooling. For most of the century high school students accounted for only 2% of public school enrollment, which meant that even the largest cities normally had only one such school for each sex. Thus within each school system high schools occupied a uniquely prominent position: they were, in the words of one of Central's founders, "the crowning stone of the arch" of public education.(1)

Early Central High School acted as a star attraction and anchor of the new-born system of common schools in

Philadelphia. A special committee of school controllers in 1841 stressed this role:

> Before the establishment of the High School, the Board is well aware that it was found impossible to fill the grammar schools of the different sections of the County of Philadelphia, while at this time the schools are not only full, but many candidates are waiting for admission. This result, your Committee believe, not only from their own observation, but from the report of others who have had much experience on the subject of public education, has been principally produced by the operation of the High School. An emulation and desire to reap the extensive advantages which have been thus opened to the public, have been raised, to which the public schools, before the establishment of the High School, were strangers.(2)

At the same time, Central High School reflected and transmitted bourgeois-republican values. After touring the school in 1842, a former state superintendent of schools expressed his strong endorsement of Central's ideological character:

> The plan of government exercised by the professors, is such as appears admirably calculated to elevate the character, to impress upon the youthful mind that we are all rational and accountable beings, possessing, by nature, the powers which, if properly cultivated, would render our social relations of the most refined and polished cast.
>
> Its effect is to teach the pupils self-government -- to control their persons -- to respect as well as love those around them, and that strict regard for order and law so necessary in a country of freemen.
>
> The course of instruction is in every way calculated to attach them to the institutions of our country, to fill their minds with a devotion to our republican government, and inspire them with a laudable ambition to become useful and

> eminent citizens of the community in which they live.
>
> The pupils are taught in the discipline of the school, that merit alone is the distinguishing trait in the American character -- that talents and integrity will elevate any one to a high superiority over rank or wealth -- that no aristocracy can flourish, or even exist in this country.(3)

Thus Central High School played an important organizational and ideological role in nineteenth century Philadelphia. It served as a model for other schools to emulate and as a principle around which the school system could organize. This study analyzes both the high school's larger social role and its inner social processes from its opening in 1838 through its transformation 101 years later. The analysis is based in large part on a wide array of records gathered by high school officials and alumni over the course of its long history and now preserved in its archives. The extent and completeness of these records is a consequence of Central's extraordinary prominence in the city and the awareness of all those connected with it that its affairs were matters of public importance. These remarkable sources include: three alumni-produced histories of the school, one of which contains brief biographies of all nineteenth century faculty members; individual records for every student who attended the school from its opening to the present, which make it possible to analyze the origins and behavior of a representative sample of the entire student body; a complete and detailed set of the minutes from high school faculty meetings; a complete set of annual reports written by Central's presidents between 1840 and 1915, containing extensive statistics on student characteristics and behavior, detailed discussions of internal procedures and dissertations on the school's purposes and functions; and a variety of catalogues, yearbooks, news clippings, published reports, hearing transcripts and handbooks.

The data from Central High School are analyzed in this study in a manner that is simultaneously historical and sociological. In the words of Charles Tilly, sociologists all too often view history as a collection of "raw evidence awaiting sociological analysis." In contrast he argues that history is itself analytical and that in fact any form of "analysis is historical to the extent that the place and time of the action enter into its explanation."(4) It is in this sense that the Central study is historical. The analysis focuses on a single school in the context of a particular city, and thus place is an integral element. The analysis also is directed toward explaining the changing character and role of the school over a span of 100 years, and thus time is likewise a focal point of the discussion.

By examining the social processes within one school and then connecting this level of analysis with the school's role in the school system, this study provides a unique perspective on the changing nature of schooling. Most historical accounts have focused on an entire system of schools at a city or even state level. Studies from this aggregate perspective either fail to explore the inner workings of schools altogether or they interpret these processes as reflections of general trends; also such studies tend to focus on the formal structure of school systems, since they lack a vantage point for viewing the pattern of informal interaction among schools. From the perspective of Central High School, this study has found, for example, a close connection between the declining collegiality of the school's internal governance and the rise of a system bureaucracy; it also discovered a strong and centralized informal structure of relations among schools existing underneath a formal structure that was loose and decentralized.

In addition to its historical character, the approach followed in this account of Central High School is also distinctively sociological. The difficulty is in attempting to deal theoretically with historical events without glossing over the particulars of time and place. Stinchecombe argues convincingly that the imposition of sociological models on history is the wrong way to proceed, but he carries this point to an extreme by asserting that "one does not apply theory to history;

rather one uses history to develop theory."(5) I agree that the analysis of historical processes is a particularly fertile method for developing theories of social life, and in this study I have worked deliberately to extrude theoretical findings from my examination of Central's history. But I see theory playing a role in the beginning of the analysis as well as the end. As Tilly has noted, historical analysis needs a starting point or points which provide angles of attack on a dauntingly complex and amorphous collection of data. Theory in this sense is not imposed on the data but is used as a means for making sense out of it.

> Theories are tool kits varying in their range and effectiveness but proposing solutions to recurrent explanatory problems. Some of those instructions are worthless, some are misleading, and some are good. But it is normally better to have a bad tool than none at all.
>
> Why? Because explanatory problems recur in history as they do elsewhere. When a problem recurs, why make the same mistakes over again? Even a bad theory generates standard ways of solving problems, reminders of difficulties on the way to the solutions, and a record of part results.(6)

The sociological theories which provide the analytical starting point for this case study can be arranged into four broad categories: theories about the influence of society on schooling, about the relative significance of the products of schooling, about the sociological meaning of curricula and about the organization of school systems. In this introduction, I will raise briefly the central questions about social processes within and between schools that arise from these theoretical perspectives. This discussion will set the theoretical context for the analyses in the main body of the text; in the concluding chapter I will explore the implications of my findings for these theories.

Theories about the influence of society on schooling can be categorized according to the type of causal linkage which they emphasize. One type finds the linkage in modernization, another in social control, a third in class culture and a fourth in status-group competition. Modernization theory has its roots in Durkheim's analysis of the The Division of Labor in Society.(7) At its core is the idea that as societies modernize they experience an inexorable process of structural differentiation. Initially this occurs on a grand scale as specialized institutions develop to care for realms of social life which were originally encompassed by the family, but the process then continues as all aspects of social structure are divided and sub-divided into functionally distinct elements. One consequence of this structural change is the gradual replacement of cultural parochialism within a society by a universal set of values. A number contemporary American writers on education -- including Parsons, Dreeben, and Blau and Duncan(8) -- have identified the key value in this modernizing culture as the orientation toward achievement in contrast with the earlier stress on ascription. The implications of modernization theory for an understanding of schooling are two-fold. First, it leads the observer to expect that education would develop into a separate institution as a result of growing structural differentiation and then that the organizational and curricular structure of schooling would itself become differentiated. Second, it raises the expectation that schooling would be devoted to the task of promoting an achievement orientation among students.

Social control theories of schooling -- expounded by such writers as Karier, Spring and Nasaw(9) -- look on schooling as an instrument of class domination. While modernization theory takes an ahistorical and apolitical approach to education, stressing a universal process of differentiation, social control theory adopts an historically-specific and politically-focused stance, emphasizing the unequal distribution of power between classes in capitalist society. In this view public schooling was created by the upper classes as a means for gaining control over a working class that was recently freed from traditional social constraints by the advent of capitalism. The schools are seen as having succeeded in achieving this goal by instilling submissive behavior into working class students and by training them in skills suitable to their future subordinate occupational roles. Under these circumstances, one would first expect to find that the content and organization of such schooling would be sharply differentiated according to class. Second, one would expect to find that the founders, systematizers and innovators who shaped the educational system were class-conscious members of the bourgeoisie with an expressed concern about developing and maintaining a disciplined workforce. Third, one would expect to find education acting as a simple function of class relations and not as a relatively autonomous institution.

While social control theories are predicated on the direct domination of one class over another, another approach sees this domination taking place through the medium of class culture. Class cultures are viewed as emerging from the same roots as class relations, namely the process of socially produced material life. As a result these cultures bear the same relation to each other that the corresponding classes do, dominant and dominated, while they retain a certain autonomy from these classes. The dominance of the dominant class's culture is accomplished in a variety of ways: by pervading all corners of social life, by defining the attitudes, values and norms used to understand interaction, by incorporating members of the opposing class and elements of the opposing class culture and by establishing the legitimacy of class rule. The theory of class culture was originally derived from Marx by Gramsci and more recently elaborated by Williams, while its implications for education can be found in the work of such writers as Willis, Bowles and Gintis, Bourdieu and Hogan.(10) Based on this theory, one would predict first that public schooling would evolve as a model expression of dominant class culture, perceived by the founders as an altruistic extension of the benefits of this culture to all classes and not (as social control theory would have it) a cynical repression of the lower orders. Second, one would predict that if schooling arose from such a source, it would exert an impact on social life that was not reducible to class relations.

The theory about the impact of status-group competition on the character of schooling derives originally from Weber's writings on education but it has been most thoroughly developed in recent years by Collins.(11) While the previous two approaches were based on class, which is defined by the social relations of production, this theory is grounded in a different concept, status, which is defined by the possession of social honor. Instead of classes fighting for social and cultural domination, in this view one sees interest groups vying for positions of relative advantage in a hierarchy of prestige. Schooling enters into this picture because its credentials offer a form of invidious distinction over which these groups can compete. From the perspective of this theory, one would expect to find, first, that educational credentials played a more central role in instigating the founding and restructuring of school systems than did the actual content or process of schooling, that the commodity-value of schooling exceeds its use-value. Second, one would expect to find that the institution of education would be quite independent of structural constraint, responding instead to the demand pressures exerted by the consumers of educational credentials.

The data from Central High School supply only superficial support for modernization theory and none at all for social control. Both of the remaining theories receive strong substantiation, but they best apply at different times in the school's history. The class cultural perspective best explains the origins and early form of the high school while status-competition theory best explains the transformation of the school near the turn of the century. Central was founded as a medium for expressing and transmitting bourgeois-republican values -- particularly such values as practicality, meritocracy and self-discipline identified by the former state superintendent in the passage quoted earlier. However, the later abandonment of practicality and character-formation in favor of a purely academic goal for the school is best understood as the result of the demand from the middle class parents of Central students for a status advantage over the growing number of families sending their sons to the new high schools in the city. By changing to a college-preparatory curriculum, Central both provided a channel to a higher level of educational status-conferment and assigned itself an indispensible role in achieving that level.

Theories about the products of schooling -- about what schools do -- differ primarily according to the degree of significance attached to each of the various outcomes. Some approaches stress skill transmission, others stress value socialization and a third group emphasizes the conferring of credentials. The significance of skill transmission is expounded most prominently by Schultz, but this position is also supported by the work of structural-functionalists in sociology, such as Davis and Moore and Blau and Duncan.(12) An emphasis on skill training fits naturally into the folds of modernization theory -- which argues that as the occupational structure differentiates, technology advances and average skill-requirements for employees rise. As a result, societies create schools (in part) to meet the need for training youths in higher level cognitive skills, and youths in turn attend these schools primarily in order to receive the skills necessary for fulfilling future job roles. From this perspective one would predict that the instructional content of modern schooling would concentrate on developing skills that are occupationally relevant: that is, the curriculum would tend to be dominated by useful and even vocational subjects rather than literary or academic subjects.

Value socialization is seen as the most significant part of what schools do by a variety of educational theorists. Structural-functionalists, such as Parsons and Dreeben(13), argue in conjunction (once again) with modernization theory that the key social benefit provided by the modern school is its contribution to the construction of ideological concensus. The meritocratic organization of schooling teaches students to believe in the necessity of striving for achievement and the inevitability of reward for those who succeed -- the focal values of a modernizing society. Social control theorists and proponents of the class cultural perspective both also stress the primary importance of the value content of schooling. The difference is that while the functionalists see this value socialization as beneficial to all members of society (a sharing of the common culture) the class theorists see it acting to the detriment of the working class (instilling the values of the dominant culture). The value emphasis, in either of its variants, would predict that the meritocratic form of schooling would receive more earnest attention from educators than the skill-content of the curriculum. In these terms, then, the procedure by which skill achievement was measured would be of greater concern than the actual skills which students achieved.

Credential theorists, particularly Collins(14), argue that the most significant outcome of schooling is the certificate granted to the student at the completion of his or her studies. This approach is naturally aligned with status-group competition theory, since educational credentials are seen as providing the holder with an incremental status advantage. Therefore one would predict, from this perspective, that educators would show greater concern for the prestige of a school's credentials than for either the content or the form of instruction within that school. As a result, one would also predict that changes in a school's curriculum or pedagogy would more likely be precipitated by the status implications of these changes than by their instructional implications.

The Central data show support for all three of these theories. The early high school was directed toward both skill training and value socialization, the former embodied in a terminal and business-oriented curriculum and the latter embodied in an intensive system of discipline. However when the school shifted to a college-preparatory curriculum, the learning of useful skills and core values became less important to the parents of students than the acquisition of educational credentials. The data suggest, in fact, that the event which precipitated this shift was a transformation of the market for educational credentials in the 1880s brought about by the expansion of the university and the emergence of competing high schools. The result was that a Central degree was changed from a certificate of ability to a certificate of admission to higher level credentials, from a utility to a commodity.

While the acquisition of knowledge is not always the most significant outcome of schooling for the student, it nonetheless occupies the bulk of his or her time in school. The device for codifying this knowledge and structuring its transmission is the curriculum. There are two theories about the sociological meaning of curricula which I will explore in this study. One of these, proposed in passing by Young, elaborates the social characteristics of high-status and low-status knowledge.(15) He argues that high-status knowledge is: 1) bookish, focusing on the written word; 2) individualized, shunning cooperative learning and communal drill; 3) abstract, distancing itself from the knowledge of the learner; and 4) unrelated, standing at odds with the daily life and experience of the community. By inversion, low-status knowledge would be characterized by oral presentation, group learning, concreteness and practical application. This scheme for identifying the status implications of knowledge could profitably be incorporated into theories of status-group competition and educational credentialism. In conjunction with these theories it would predict, first, that schools with highly valued credentials would focus on transmitting bookish, individualized, abstract and impractical knowledge, and that schools with lesser credentials would transmit knowledge with the opposite traits. Second, one would expect the mode of knowledge-transmission to change as the value of a school's credentials changed.

A second theory, proposed by Bernstein, explores the implications of the knowledge codes embodied in different school curricula.(16) These codes are the inner structure of the curricula and as such they constrain the ways in which knowledge is presented and perceived. He identifies two major types of codes. A collection code, which tends to predominate in modern education (especially England), is characterized by strong classification. This means that the subject matter is differentiated and compartmentalized within the curriculum to such a degree that the boundaries between subjects are difficult to bridge. Thus knowledge is presented to students as a collection of unrelated specialties. A collection code is also usually characterized by strong framing, which means that knowledge transmission within the school is sharply distinguished from processes of knowledge transmission that exist in the community. School learning and commonsense are thus not allowed to mix. An integrated code is characterized by weak classification and weak framing. Subjects are presented in such a way as to stress the relationships among them and the degree of their integration around a central epistemological principle. Also the boundaries between school learning and community learning are not clearly defined.

The implications of Bernstein's theory are both profound and largely unexplored. He suggests that an integrated code requires that a school maintain a concensus around the integrating principle of the curriculum, while a collection code permits and even promotes divided loyalties. Schools with integrated codes therefore tend toward collective modes of governance, which promote ideological unity, while those with collection codes can opt for a differentiated and hierarchical internal structure. Schools with integrated codes also tend to extend their influence over students beyond academics to ideology more that do those with collection codes. Finally, all of these factors suggest the conclusion that schools with integrated codes are organizationally more unstable than their counterparts and thus that the long-term historical trend in curriculum codes is away from integration and toward collection.

The Central High School data show that the practical curriculum of the early school had all of the characteristics of Young's low-status knowledge, yet, paradoxically, attendance at the school was accorded high prestige. The answer to this paradox, I find, lies in the ideological superiority and unique market position of the high school relative to its chief competitors, the colleges, despite the high-status content of the latter's curriculum. Meanwhile Bernstein's categorization of curriculum types is strongly confirmed by the Central case. The early curriculum was clearly characterized by an integrated code while the later academic course represented a shift toward a collection code. This view helps explain the transition as a result of a lost ideological concensus and helps explain the parallel organizational changes as a consequence of the code change.

The last category of theories which I intend to explore in this study focuses on the organization of school systems. There are two theories in particular which I intend to use as entry points into the analysis at the system level. The first is Turner's effort to use mobility patterns to characterize the differences between educational systems in England and the United States.(17) He argues that the U.S. has a system of contest mobility in which people compete with each other for elite status. The organizational implications of this system for American schools included an emphasis on: opportunity, motivation and merit; practicality in subject matter; and publicly visible and understandable educational credentials. England on the other hand, according to Turner, has a system of sponsored mobility in which people are selected and groomed for elite status under elite sponsorship. The organizational implications for English schools include a stress on: selection and ascription; intellectualized curriculum; and elite-oriented credentials.

The second organizational theory I will examine is actually a collection of theories that focus on the peculiar characteristics of school system bureaucracies. As a result these theories require a more thorough exposition. If a bureaucracy is defined as a differentiated hierarchical control structure which is governed by rules and peopled with professional administrators, then school systems only imperfectly represent this type. Bidwell for one states that schools achieve only a "rudimentary form" of bureaucracy --

primarily because of the relative autonomy of the teacher in the self-contained classroom, an autonomy which is naturally in tension with efforts at bureaucratic control.(18) The result is a type of organization characterized by "structural looseness" or by what Weick calls "loose coupling."(19) Lortie in turn identifies several of the ways that this tension is articulated organizationally. One is that a peculiarly high proportion of the rules that the school system hierarchy imposes on teachers provide a relatively low level of constraint on their behavior. That is, the rules are sufficiently nonspecific to allow teachers some flexibility in complying. Another way is that hierarchical authority appears to be "zoned" in such a way that it is more potent with regard to administrative matters than it is with regard to instruction. Thus high constraint orders are issued about administration and low constraint orders about instruction.(20)

Lortie uses instruction to refer strictly to classroom teaching while administration refers to all those activities and procedures which support instruction such as providing building, maintenance, supplies, payroll, books and records. While the latter activities are easily routinized, the former are not. And it is routine activities which are most likely to be successfully brought under bureaucratic control; attempts to do so with non-routine processes lead to gross inefficiency. Perrow in turn defines the chances for routinizing an organization's work process (and thus also for bureaucratizing its structure) by means of two variables, technology (high, low) and raw materials (uniform, nonuniform).(21) Where the raw materials that the organization is processing have a relatively stable and uniform character and where the technology for handling these materials (that is, the systematic understanding of how these materials can be processed) has advanced to the point that it can be translated into fixed procedures for nearly all contingencies -- then the process is thoroughly routine and bureaucracy becomes the logically appropriate and empirically probable structure of choice. That zone of school system processes which Lortie calls administrative fits neatly into this cell of Perrow's four-fold table. Finances, payrolls, buildings, records, supplies -- all are stable and uniform materials and there are a number of tested management techniques for dealing with them. It is quite understandable therefore that school systems should come to handle these matters bureaucratically.

However where the raw materials are unstable and nonuniform and the technology is poorly defined and largely judgmental rather than technical, then the organizational process is anything but routine and bureaucracy is thoroughly inappropriate. The instructional zone closely matches this description: the individualized learning capabilities and personality traits of students make pedagogical theory of less use to teachers than their own judgment developed through classroom experience. Thus once the self-contained classroom is accepted as a given, in-class instruction becomes a black box to the educational bureaucracy. The latter can constrain teachers through a variety of routines -- courses of study, text books, standardized tests -- but only loosely, because what actually occurs within the classroom walls is not routinizable, is not supervisable and thus is not amenable to direct bureaucratic control.

Therefore the organizational view of contemporary school systems which emerges from Bidwell, Lortie and Perrow implies that these systems are decidedly bureaucratic when it is in regard to administrative matters and considerably less so when it comes to classroom instruction. We can push this observation one step further by recognizing that these two functions tend to be organizationally and spatially differentiated within the typical American school system. Administration is carried on for the most part by the members of the superintendent's staff located in a central office while instruction is carried on in a large number of geographically scattered schools. This means that the superintendent's office is the seat of bureaucratic power in the system, that the schools are directly subject to this power administratively through the medium of the principal, but that instructionally the schools are semi-autonomous. If also follows that each school is in roughly the same situation as the others in relation to the system's administrative bureaucracy. For each is directly subjected to high constraint administrative directives and low constraint instructional directives from the superintendent -- without having these influences mediated by other schools in some sort of between-school authority structure.

The Central High School data show that for most of the nineteenth century the Philadelphia school system was characterized by a remarkably pure form of Turner's "contest" organizational structure. Students and teachers alike won positions at the higher levels of the system through open individualistic competition. The result was an educational pyramid with the high school at the apex as the system's prime object of emulation. Central's attractiveness combined with its entrance exam gave it the power to set curriculum standards for the lower schools at a time when the pre-bureaucratic school board lacked the formal authority to do so on its own. As a system-wide bureaucracy began to develop in the 1880s, the autonomy and elevated position of the high school were progressively undermined with each advance of bureaucratization and eventually Central itself was subordinated to the new authority. Interestingly this organization change was marked by a shift away from pure contest toward what Turner called sponsorship. Individualistic competition mediated by testing gave way to school sponsorship by means of credentials under the new bureaucratic structure of schooling. As the theorists of structural looseness might have predicted, Central's subordination was a reality more at the formal administrative level than in terms of the school's inner processes. The school managed to maintain its traditional pedagogy and curriculum throughout this period, and in the 1930s it succeeded in winning restoration of its former elite status.

A few words about the organization of the text are in order. The first chapter has two aims. One is to provide the reader with an integrated account of the history of Central High School into which the functionally differentiated accounts of later chapters can be fitted. Another aim of this chapter is to explore Central's role in the organizational development of the Philadelphia school system. The second chapter is devoted to the internal organization of the school, starting with its changing pattern of internal governance and then shifting to the social and occupational characteristics of its faculty. Chapter three focuses on the family and school characteristics of a sample of Central students, with a special interest in exploring the relative impact of social class and academic merit on educational attainment. Chapter four examines the high school's curriculum over time and explains the radical transformation of this curriculum which took place in the late nineteenth century. In the conclusion I seek to develop the theoretical implications of the findings presented in the earlier chapters, drawing on the theories introduced here.

FOOTNOTES

1. Thomas Dunlap, "Introductory Address of the Commencement of Central High School, February 12, 1851" (Philadelphia: Board of Controllers, 1851).

2. Board of Controllers of the Public Schools (Philadelphia), *Annual Report*, 1841, p. 42.

3. *Ibid.*, 1842-1843, p. 56.

4. Charles Tilly, *As Sociology Meets History* (New York: Academic, 1981), p. 6.

5. Arthur L. Stinchecombe, *Theoretical Methods in Social History* (New York: Academic, 1978), p. 1.

6. Tilly, *As Sociology Meets History*, p. 11.

7. Emile Durkheim, *The Division of Labor in Society* (New York: Free Press, 1933).

8. Talcott Parsons, "The School Class as a Social System: Some of Its Functions in American Society," *Harvard Educational Review* 29 (Fall 1959): pp. 197-218; Robert Dreeben, *On What is Learned in School* (Reading, Mass.: Addison Wesley, 1968); Peter M. Blau and Otis Dudley Duncan, *The American Occupational Structure* (New York: Free Press, 1964).

9. Clarence Karier, *Shaping the Educational State, 1900 to Present* (New York: Free Press, 1975); Joel Spring, *Education and the Rise of the Corporate State* (Boston: Beacon, 1972); David Nasaw, *Schooled to Order* (New York: Oxford University Press, 1979).

10. Paul E. Willis, *Learning to Labour: How Working Class Kids Get Working Class Jobs* (London: Saxon House, 1977); Samuel Bowles and Herbert Gintis, *Schooling in Capitalist America* (New York: Basic, 1976); Pierre Bourdieu and Jean-Claude Passeron, *Reproduction in Education, Society and Culture* (London: Sage, 1977); David Hogan, *Education and Progressive Reform in Chicago, 1880-1930* (Philadelphia: University of Pennsylvania Press, forthcoming).

11. Max Weber, "The Chinese Literati" in H.H. Gerth and C. Wright Mills, *From Max Weber* (New York: Oxford University Press, 1946), pp. 416-444; Randall Collins, *The*

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12. Kingsley Davis and Wilbert E. Moore, "Some Principles of Stratification," American Sociological Review 10 (April 1945): pp. 242-249; Blau and Duncan, American Occupational Structure.

13. Parsons, "School Class;" Dreeben, On What is Learned in School.

14. Collins, Credential Society.

15. Michael F.D. Young, "An Approach to the Study of Curricula as Socially Organized Knowledge," in Knowledge and Control, ed. Michael F.D. Young (London: Collier Macmillan, 1971), pp. 19-47.

16. Basil Bernstein, "On the Classification and Framing of Educational Knowledge," in Class, Codes and Control, vol. 1 (New York: Schocken, 1971), pp. 202-230.

17. Ralph H. Turner, "Sponsored and Contest Mobility and the School System," American Sociological Review 25 (October 1960): pp. 855-867.

18. Charles E. Bidwell, "The School as a Formal Organization," in Handbook of Organizations, ed. James G. March (Chicago: Rand McNally, 1965), pp. 972-1022.

19. Karl E. Weick, "Educational Organizations as Loosely Coupled Systems," Administrative Science Quarterly 21 (March 1976): pp. 1-19.

20. Dan C. Lortie, "The Balance of Control and Autonomy in Elementary School Teaching," in The Semi-Professions and Their Organization: Teachers, Nurses, Social Workers, ed. Amitai Etzioni (New York: Free Press, 1969).

21. Charles Perrow, Organizational Analysis: A Sociological View (Monterey, Cal.: Brooks/Cole, 1970), pp. 75-85.

CHAPTER I

A HISTORY OF CENTRAL HIGH SCHOOL AND ITS ROLE IN THE DEVELOPMENT OF THE PHILADELPHIA SCHOOL SYSTEM

CHRONOLOGY

1818	Philadelphia school district created; pauper test; sectional boards choose county-wide controllers
1821	Boston English School opens
1826	Franklin Institute High School opens
1834	Pennsylvania common school act passed
1836	Revised common school act authorizes Central High School
	Bache begins tour of European schools
1838	Central High School opens
1839	Bache named acting principal, reorganizes school
1840	Bache named superintendent of schools for one year
1842	Hart becomes principal
1849	General elevation of schools as CHS entrance requirements raised
	CHS granted power to confer academic degrees
1851	Admission age raised from 12 to 13
1854	Philadelphia city and county consolidated; school system reorganized, ward boards picking controllers; Know-Nothings elect mayor
	CHS moves into new building at Broad and Green
	Hart drops elementary course, Greek, Spanish and Anglo-Saxon
1856	City councils cut CHS budget
	Hart combines principal and classical course leaving no electives
1858	Maguire named principal
1862	Formal hearing into charges against Maguire and

	faculty; three professors fired and Maguire supported by board in split decision
1865	Girls' High and Normal School principal fired over conduct of entrance exam
1866	Another formal hearing results in controllers declaring entire CHS faculty "vacant"
	Four professors and Maguire not rehired
	Riché named president
1867	Board becomes appointed by judiciary
1868	Board drops admission exam in favor of certificates and quotas
	Board adopts course of study for elementary schools
1877	Board restores exam but retains quotas
1881	Public Education Association formed out of Charity Organization Society
1883	Philadelphia' first superintendent takes office
	Central Manual Training School established
1886	Taylor named president
1888	Johnson named president, abolishes collegial governance
1889	Johnson introduces differentiated curriculum and reorients school toward college preparation
1894	Thompson named president
	Replaces demerits with discipline committee, number grades with letters; organizes school by committee and department; restores faculty meeting but not collegial governance
1898	Commercial department added as a separate track
1900	Entrance exams abandoned; admission by certificate
1902	Lavish dedication of new building at Broad and Green; Roosevelt speaks

1905	School law cuts authority of ward boards, strengthens board of education and superintendent
1906	Brumbaugh named superintendent -- author of school law, arch-Progressive and Thompson's nemesis
1910	Central opens annexes in Frankford and Germantown
1911	School code further strengthens board and superintendent
1912	Superintendent given power over high school curriculum
	Superintendent reorganizes high school system so that all high schools (including CHS) would be four-year comprehensive regional schools
	Central Manual Training School merged into CHS as mechanic arts department
1915	CHS annexes become high schools
1919	Philadelphia Trades School merged into CHS as industrial arts department
1920	Haney named president
	Discipline committee abolished, student government established
1930	Promotion by grade dropped in favor of promotion by course
1935	Restoration of CHS to academic status approved
1939	CHS moves into new building and assumes new status

This chapter is a general history of the Central High School of Philadelphia from 1838 to 1939. Its purpose, in part is to provide a broad overview of the school's development as context for later chapters, which are focused more narrowly on issues of internal organization, student characteristics and curriculum. In addition, its purpose is to define the role of the high school in the organizational development of the Philadelphia public school system.

Central played an important role in the early school system because of the extraordinarily decentralized character of the city's schools throughout the nineteenth century. Michael Katz has shown that the typical pattern for urban school systems during this period was to pass from local control at mid century through a stage of incipient bureaucracy with the arrival of professional supervision in the third quarter to the final achievement of full-fledged bureaucratic control by the last quarter. Boston, for example, appointed its first superintendent of schools in 1851, abolished local boards in 1855 and by 1884 provided the superintendent with a full staff and legal authority over the system.(1) Nor was Boston unusually advanced in this regard. Cubberly reports that by 1861, 26 American cities had superintendents.(2) Philadelphia however did not appoint its first superintendent until 1883, did not curb the power of local school boards until 1905 and did not grant the superintendent full authority over the system until 1911. Therefore throughout most of the nineteenth century, the city's school board lacked the administrative manpower, the legal authority and the political power to impose a bureaucratic structure of control on the school system.

But in the absence of formal controls, an informal yet highly centralized control structure emerged within the school system, and the dominating power over this structure was Central High School. In exploring Central's role in the school system, I will be focusing on: the early success of this informal structure and its later replacement by a superintendent-dominated administrative bureaucracy; the decline in the high school's power and prestige within the system which occurred at the same time; and the parallel changes that affected the internal organization and curriculum of the school. Thus in the account that follows, the history of the high school and the history of the school system will be interwoven. The two sets of events are so closely interconnected that they are best understood as two parts of the same story.

1. THE FOUNDING OF CENTRAL HIGH SCHOOL

In chapters three, four and five I will be arguing that Central High School was created as an expression of bourgeois-republican values. But at this early point in the discussion I would prefer to approach the subject of Central's origins from an organizational perspective, thereby preserving the organizational focus of this chapter and deferring discussion of the broader ideological interpretation until later. In these terms, the high school was founded in part in order to draw critically needed public support to the new common school system. Prior to the common school laws of 1834 and 1836 the only way a parent could enroll a child in the public schools was by being declared a pauper; and although these laws abolished this provision, the schools remained stigmatized by their past. If the democratic vision of truly common schools were to be realized, a way would have to be found of attracting the children of the middle classes. The prime attraction became Central High School.(3)

This view helps explain several puzzling characteristics of the school that finally opened in 1838 on East Penn Square (at the site of the present John Wanamaker department store). For one, this was no ordinary schoolhouse: nearly half of the considerable expense for the building went to a marble facade and an astronomical observatory.(4) For another, the curriculum was a four year classical program of the type required for college entrance. Central, it appears, was designed to be the antithesis of a charity school. The prospect of receiving a classical education in pleasant surroundings at no cost must have been enormously attractive to the city's middle classes and helpful in garnering their support for public schooling. It is worth noting too that Philadelphia was unique neither in its problem nor in its remedy. Troen reports that the St. Louis board also pursued middle class support by providing the inducement of an elaborate building for the high school(5), and Tyack adds that there were also grand high school structures in Cincinnati, San Francisco and Portland.(6)

In the early 1840s a number of letters to the editor identified as aristocratic the very characteristics of the high school that made it attractive to the middle class, charging that it was too expensive and too exclusive to be considered a democratic institution.(7) As one writer put it,

> ...that thirteen poor children should not be excluded from the means of procuring an English education, in order that one son of a rich man should learn Latin and Greek at the public expense. That is the principle upon which I have taken my stand, and the only one that I am now advocating.(8)

But the high school's supporters quickly responded to such charges by publishing lists of the not-so-aristocratic occupations of its students' fathers and by portraying it as a contribution to rather than a drain on the common school system. In the words of one editorial:

> In estimating the value of the High School to the community, its influence on the Grammar schools is by no means to be omitted. This has been of the happiest kind. It has created additional inducement for all classes of citizens to send their children to them, and has afforded a powerful stimulus to both the teachers and pupils of these schools, the result of which is clearly seen in the increased activity and vigor which have been infused into them, and in a general elevation of the standard of scholarship.(9)

But the most telling piece of direct evidence for the organizational motive behind Central's founding is a simple but effective rule which the controllers adopted in 1838 and kept in effect until the end of the century. No one could be admitted to Central who was not a student of the Philadelphia public schools. In 1842 the minimum prior stay was set at one year. This rule presented middle class parents with a clear choice: either they committed their sons to participation in the public school system or they would be denied access to its greatest asset. It appears that parents increasingly showed willingness to accept the offer in these terms, allowing their children to be drawn into the public school system. In 1850 principal John Hart noted that the average time spent in public school by students admitted to Central had grown from two and a half years in 1842 to five in 1850. "It is now", he reports, "becoming a rare instance for a pupil to be admitted to the High School who has received any part of his preparation elsewhere than in the public schools."(10) By producing in Central a very uncommon school the board had managed to help secure the very commonness of its school system.

If Central High School helped draw support to the common school system, it also aided this same cause -- at least in the view of the board -- by giving the board a way of gaining control over the system. The problem with the newly created common schools of Philadelphia county was that the board of controllers was only nominally in charge of them. The schools in each section of the county were responsible to a board of directors elected or appointed locally, which in turn elected representatives to the county-wide board of controllers. The latter could disburse money but had no direct power over any schools in the district except two: the Model School (later Girls' High and Normal School) and Central. Unhappy with this situation, the controllers in 1836 requested that the state remove from its jurisdiction the outlying sections of the district because of an "utter want of competent supervision in those sections, and consequent imperfection in the instruction there afforded." They concluded, "If this change should be accomplished, the system of public instruction in this district will become firmly established upon a basis of absolute permanence..."(11)

In the eyes of the board, the viability of the common schools was contingent on centralized supervision. When the state denied its request for removing the wayward sections, the board searched for ways of acquiring more influence over them -- especially by using the newest means available to it, Central High School. One attempt that is indicative of the aims of the board, however ineffectual it was in practice, was the appointment of Central's first principal, A. D. Bache, as superintendent of schools in 1841. The position only lasted one year (there wasn't another superintendent until 1883) and he was given no real authority, but the activities he did engage in are significant. At the request of local boards he visited individual schools, making suggestion about their operations, and he also made recommendations about the competence of teacher candidates.(12) Note that as the board made its first tentative moves in the direction of bureaucracy -- centralizing authority and setting qualifications for office-holders -- it turned to the high school for expert assistance. It is a pattern that was to be repeated many times during the nineteenth century.

However, Central also helped regulate the common schools in another way that was more immediately effective by introducing the notion of an educational ladder. Prior to the common school laws, public schools in Philadelphia were thoroughly undifferentiated: every school contained a variety of ages and abilities. But with the passage of the second school law in 1836, the controllers moved quickly to promote the organization of schools into a three-stage progression from primary to grammar to high school(13), and in the 1840s they added a fourth stage (known as "secondary") between the first two. The factor that turned this innovation into a functioning educational hierarchy was the enormous drawing power of Central High School. John Hart from the vantage point of 1850 explained why it is that Central's attractiveness gave it power over other schools:

> "the influence of the institution upon the other schools [according to a report by the controllers] is believed to be worth more than all that it cost, independent of the advantages received by its actual pupils." This influence is exerted solely through the examinations for admission. The privileges of the High School are held forth to the pupil as the reward of successful exertion in the lower schools. They are kept constantly and distinctly in his view, and operate as a powerful and abiding stimulus to exertion through all the successive stage of promotion, from the lowest division of the Primary to the highest division in the Grammar School. The influence is felt by those those who do not reach the High School quite as much as by those who do. It is an influence pervading the whole Public School system.(14)

There are two points of particular interest in this account. First, in the absence of formal authority over the grammar school, Central's influence was necessarily indirect though nonetheless effective. The high school was not able to and did not need to dictate policy to the grammar school masters. It was parents eager to enroll their sons at the high school who exerted pressure on the grammar school master to adapt his instruction to the demands of the entrance exam. Second, it is worth noting that "the privileges of the High School" were distributed strictly on the basis of scholastic worthiness as measured by a publicly administered objective examination.

When Thomas Dunlap, president of the controllers at the time of Central's founding, called the high school "the crowning stone of the arch" of public education (15), he may actually have identified the critical role played by the school in the early days of common schools in Philadelphia. As the high point and most valued element of the new school system it helped draw much needed support that might otherwise have been lacking. And as the crowning stone it held a structurally dominant position within a system lacking both structure and authority. Yet his figure of speech misses a crucial quality of the role that Central played which may better explain its origins. A more appropriate metaphor would be found in the capitalist marketplace. After all the strategy adopted by

Central's founders was not to impose the school but to offer it as a new and very attractive product in the educational market. Its success was measured by the number of potential consumers who sought to enter it and by the amount of investment they were willing to make in the school system (both in time and effort) in order to succeed. And following the logic of the market, the influence of Central on other educational products was exercised through the medium of consumer demand in a process of open and equal competition.

Of course, the metaphor begins to fall apart at this point. In liberal economic theory it is producers who invest and compete not consumers. However I am not trying to assert that the common school system was a simple extension of the market but rather an ideological expression of it. Offering Central as an educational product in order to draw support to the common school system makes special sense for a group of businessmen-reformers in an age when the market was becoming the dominant fact of daily life and the dominant idiom of thought and speech. And when these men sought to exert control over this system, they did so not by fiat -- anathema to market thinking -- but by promoting an open and intense competition which only a few could win. Therefore Central High School was created, at least in part, because it would enhance the common schools and because it would do so in a way compatible with market ideology.(16)

2. BACHE ADMINISTRATION: 1839-1842

The controllers had been in a hurry to open the high school in 1838. They appointed a distinguished faculty of four but put no one at its head, and they left to these men the task of devising a course of study. In the absence of direction, the professors (as the teachers were called) established Central as a traditional Latin grammar school with a heavy emphasis on Latin and Greek. But in the fall of 1839 the board sought advice about the school from an expert, Alexander Dallas Bache, the president of the Girard College for Orphans. Since his position at the time involved no duties (the college wasn't built yet), he offered his services to the board gratis and they accepted. He proceeded to study the school's operations and wrote a detailed report, offering a wide-ranging plan of reorganization. The board both accepted his plan and appointed him acting principal (he remained president of Girard), a position he retained until 1842.

Bache was born into a wealthy and prominent Philadelphia family: his great grandfather was Benjamin Franklin. Educated at a local classical school and West Point, he started teaching natural philosophy and chemistry at the University of Pennsylvania in 1828. He was soon taking a leading role in the city's vigorous scientific community, which revolved in particular around the newly organized Franklin Institute. He was appointed president of Girard College in 1836 and left on a two year tour of European educational institutions. He had just completed the 600 page report of his findings when pressed into service by the controllers.

Despite his short tenure, Bache's impact on the school was enormous. If the controllers created the school's form, he created its content. He designed the school to his own specifications and he presided over it long enough to make certain that his design became a reality. The essence of his plan was practicality -- which meant a stress on sciences and modern languages over classics, and a belief that the high school should prepare boys for "the pursuits of commerce, manufactures, and the useful arts."(17) This emphasis on practical education is a major current running through Central's history in the nineteenth century. Bache offered three curricula: the principal course (four years), which prepared boys for business; the classical course (four years), which prepared them for college; and the elementary course (two years), designed for those who intended to leave school early.

From the very beginning of Central's first administration, the procedures for admission to the school were a prime matter of concern for its principal. At this point and continuing for most of the century, admission was by means of an examination administered by the high school faculty. In Bache's era candidates were tested on their knowledge of grammar, reading, writing (including spelling and punctuation), arithmetic (as far as proportions) and geography.(19) Immediately after taking office Bache moved to raise the level of objectivity in exam administration by having each candidate referred to only by number, thus preventing the professors from showing favoritism to the students from one grammar school over another.(20) In the following year he sought to improve the exam's degree of consistency, precision and efficiency by converting from oral to a combination of oral and written answers.(21) To a considerable extent these steps toward the bureaucratization of admissions seem to have taken place in response to charges of unfairness by outsiders. Masking individual identities, producing a written record to meet subsequent challenges to the results and publishing explicit examination procedures all were helpful in convincing the public that entrance to the high school was a matter of merit alone.

As we have seen the school received some harsh criticism during Bache's administration along two closely related lines. One charge was that Central showed favoritism toward the rich -- by admitting a disproportionate share to the high school even though they were only minimally connected with the public schools. The other was that the high school cost entirely too much, especially when one considers that it benefited so few. In his 1842 annual report Bache responded to these charges at some length, and in the same year the board published the report of a special committee set up to investigate the charges which also staunchly defended the school. To counter the first accusation, Bache published the occupational titles of the fathers of students admitted each year (a practice carried on by his successor) declaring that fully 80% would never have been able to afford such an education for their sons without Central. As for the question of the students' time in the public schools prior to admission, he demonstrated that the average time was twice the minimum required and growing.(22)

The cost criticism was a little more difficult to explain away considering the figures involved: in 1841 Central's costs were $55 per pupil compared with $5.16 per pupil for the school system as a whole.(23) Bache argued that the high school was expensive because higher education was in general expensive as the result of small classes, male teachers and more equipment. He showed that the high school's small senior class cost three times as much per person as the large entering class, and argued that an extension of the grammar school course (as an alternative to the high school) would encounter the same decline in efficiency.

Opposition to the character of the high school under Bache was not limited to those on the outside however. Fagan asserts that Bache's practical curriculum aroused the ire of a group of classicists on the faculty led by John Frost, professor of English, who "were to wage war against Bache and were finally instrumental in his leaving Central High School in 1842."(24) Whatever the reason, he resigned in the spring of that year in order to return to teaching at Penn, and one year later he accepted the post as superintendent of the U.S. Coast Survey. His last official act at the high school was to preside over its first commencement exercises.

3. HART ADMINISTRATION: 1842-1858

In September of 1842 the high school committee chose John Seely Hart as Central's principal. Like Bache he was a young man at the time of his selection (32 years old), but there the resemblance ends. Born in Massachusetts of an old puritan family, Hart was raised in Wilkes-Barre, Pennsylvania under quite modest circumstances. His early education was limited until he enrolled in a Sunday School under the direction of a Philadelphia woman of "broad culture, gentleness, and refinement". She inspired and encouraged him to enter the Wilkes-Barre Academy, in part because of his frail constitution which made teaching an attractive occupation. He did well at the academy where he became the master's assistant, and he went on to Princeton in 1827, graduating three years later as valedictorian. After teaching for a year he entered Princeton's theological seminary and began teaching languages at the college.

Ordained in 1835, he took control of a proprietary school in New Jersey, known as the Edgehill School, from Enoch Wines, who went on to become classics professor in the original Central High School faculty. He held this position until he was called to be head of Central. When he finally left the high school in 1858 it was in order to found The Sunday School Times (of the American Sunday School Union), which he edited until 1871. At the same time from 1863 to 1871 he was principal of the New Jersey State Normal School.(25)

The contrast between Hart and Bache is striking. Bache was from a wealthy and illustrious Philadelphia family; Hart grew up in relative poverty and obscurity in a small up-state city. The former had a classical and technical education while the latter had one that was classical and theological. Bache was a professional scientist with an interest in education while Hart was a professional educator with an interest in religion. Their published work reveals this clearly. With the exception of his report to Girard's trustees, Bache's books were devoted to the results of his experimental work, his most extensive effort being Observations at the Magnetic and Meteorological Observatory at Girard College. Nearly all of Hart's output on the other hand was in the form of textbooks, with titles such as Class Book of Poetry, Manual of Composition and Rhetoric and In the School-Room.(26)

It seems quite likely that the high school committee knew what it was getting when it chose Hart for the top post. For one thing it may well have been impossible to find another man like Bache (if indeed there was another). Now that the creative work of reorganization was completed, a man of brilliance and catholic interests might find the job narrow and unchallenging. What the school needed at this point and what it would tend to attract were career-minded educators looking (in the limited career-ladder opportunities of the mid nineteenth century) for a post in educational administration with prestige and influence. Bache had made the principalship at Central High School into just such a position, more attractive to others than to himself, and now it was time for a new type of leader to pursue the work of consolidating, fine-tuning and managing the school's daily operations.

In light of this it is not surprising that Bache would consider Hart, in the words of Bache's biographer, "not sufficiently progressive."(27) But neither is it surprising that the new principal had the complete confidence of the high school committee during most of his tenure. Until the political tone changed in 1854, the committee approved all his appointments, applauded his improvements and staunchly defended him from his critics.(28) In the classic logic of organizational evolution, the charismatic founder was followed by the consummate routinizer.

Hart shared Bache's concern for a practical curriculum and zealously -- some said overzealously (29) -- expanded practical course offerings beyond those available upon his arrival. The courses he added included: Spanish, German, Anglo-Saxon, elocution, trigonometry, surveying, navigation, bookkeeping and phonography (the Pitman method of shorthand).(30) By the early 1850s Central High School was offering six languages although not to the students of any one curriculum.

But this process of expansion did not go on forever. Under the combination of financial and political pressures which followed the victory of the Know Nothing party in the municipal elections of 1854, Hart dropped Greek, Spanish and Anglo-Saxon from the curriculum; two years later German was also dropped. In addition he merged the classical course into the principal course in 1854 and then eliminated the elementary course in 1856. In two years the principal course had become the only one, and Central High School students were not again given a choice of courses until 1889.

Hart devoted an extraordinary amount of his time and energy to developing a system for maintaining discipline at the school. He eventually succeeded in codifying this system and published it as part of his 1853 annual report (covering eleven pages). The key to Hart's method was its comprehensiveness, its careful elaboration and above all its insistence that a student's grades should reflect the quality of his behavior as well as his studies: misconduct demerits were actually deducted from academic grades in computing a student's final average. (The character of Hart's curriculum and his mode of discipline will be explored more thoroughly in chapter four.)

Hart's zeal for rule-writing and precise evaluation mark him as a man whose actions promoted the spread of bureaucratic procedure within the school system long before there was a system bureaucracy. The clearest example of this is his procedure for administering the admissions exam. His devotion to detail if nothing else would demonstrate his passion for procedural efficiency. In 1850 Hart spent 20 pages discussing every step in the process including all of the question asked. He even reproduced three forms used in the process -- a form letter sent to grammar school masters announcing the exam and listing rules; a certificate for admission to the exam attesting that a student meets minimum qualifications; and a card with a number on the front (given to the student for anonymity) and rules on the back (e.g., "Be careful not to lose this card...").(32)

A man like Hart with a natural affinity for bureaucratic procedure (he also devised complex forms for grades and demerits) needs little external prompting to produce such a flurry of formal regulation. But it would be a mistake to attribute too much of the character of the school to the predispositions of its head. Hart's procedures, like those of his predecessor, could quite profitably be interpreted as an elaborate defense against charges of unfairness. As he put it in his report, "In proportion to the importance attached to the examinations for admission, is the jealousy with which they are watched, and the care with which they should be conducted."(33) For the school this care meant trying "to avoid, not only all possibility, but all appearance of favouritism..."(34) The potential critics against whom this defense was mounted were the student-candidates and their grammar school principals in addition to a generally watchful public -- which means that at least part of Central's role as bureaucratizer may have been forced on it from below. It may well have turned toward objective, formal and explicit procedure in order to make its decisions more defensible, documentable and legitimate.

In the absence of an administrative bureaucracy, Hart's actions promoted not only the spread of bureaucratic procedure but also the centralization of authority in the system. For example, he continued the pattern of Central principals acting like school superintendents although he lacked even the title which Bache had had. He examined teacher candidates at the invitation of various sectional boards; in 1848 he reported to the controllers that he had conducted a total of 49 such examinations since his appointment involving 964 candidates.(35) Also he conducted what amounted to a voluntary Saturday normal school for female elementary school assistant teachers from 1844 until 1851, when the Girls' Normal School made it redundant.(36) The controllers did not create a committee on the qualification of teachers until 1856, prior to which Central's principals and faculty provided the only system-wide influence on teacher selection in Philadelphia.

What was true for procedure was also true for organization: the key to Central's influence was its entrance exam. At one level the organizational effect of the Hart-era entrance exam was to differentiate the students qualified to enter the high school from those that were not. But on another level it served also to distinguish the grammar school principals who were capable of preparing a large number of successful candidates from those who were not. These principals were quite aware that the exam was the only basis for objective comparison among them in what was still a loosely organized school system, and thus they competed vigorously over it. Adding spice to this competition was the sure knowledge that the only way to reach the top rung of the school system's truncated career ladder, a teaching post at the high school, was to develop a firm reputation as a man who successfully prepares students for the school.(37) Hart and the other high school principals actively fostered this spirit of emulation: in every annual report during the entire life of the open entrance exam, the principal prominently displayed a chart showing the number of students accepted and rejected at the exam from each grammar school and ranking the schools accordingly. Hart characteristically went several steps farther with a series of charts comparing grammar school performance over the entire history of the exam (38) and linking the performance of students at the high school with the schools they came from.

There were two primary mechanisms that helped translate this diffuse competitive urge into a strong centralizing influence. One was the board's policy of prescribing in advance the subject areas to be examined, thus compelling the ambitious grammar school principal to organize his instruction around these areas. Another was the board's policy of granting the high school a monopoly on high school subjects. Not only were the lower schools given a powerful incentive to teach certain subjects, but they were actually barred from teaching others. By offering what no other school in the city could, the high school greatly enhanced its already considerable appeal and at the same time augmented the competitive pressure placed on the grammar schools.

Given these conditions it is not surprising that the grammar schools sought to make some changes. In 1847 and

1848 a series of protests were lodged by sectional boards over the domination of grammar school curriculum by the high school.(39) The crux of the argument was that since the high school provided for the needs of so few children -- it accounted for about 2% of the boys in the school system -- the sectional boards, in the words of the board in Germantown, "must look to our own Grammar Schools exclusively, for the education of our children."(40) Of course in order to provide more adequately for their children locally they needed permission to teach higher level courses. In 1847 the controllers made a move in this direction by simultaneously permitting grammar schools to teach U.S. history and Pennsylvania geography and adding these subjects to the admissions exam. One year later they added the equivalent of one year to the grammar school curriculum by allowing instruction in algebra, geometry, trigonometry, mensuration and surveying; and in 1849 algebra, mensuration and the U.S. constitution were made part of the entrance exam.(41) In 1851 the minimum age for admission was raised from 12 to 13.

Given Hart's role as a centralizer within the school system, one might expect him to have been on the side opposite the grammar schools on this issue as on so many others. Yet he not only supported the changes, he actively proposed them in a special report to the controllers in 1849. He gave two reasons for his support. First, "The pressure for admission is now such as to require some immediate action on the part of the Board of Controllers."(42) Table 1.1 reveals the source of his concern. From 1838 to 1849 the number of candidates seeking admission to Central High School grew almost continuously. Traditionally the school had dealt with this situation by gradually increasing the size of the entering class, but by the mid 1840s there was growing concern about overcrowding. One solution of course would have been to accept a decreasing percentage of the applicants, but this would be a politically awkward move for a school already under fire for elitism. Also a school whose fairness was under such close inspection would have difficulty justifying the rejection of a large number of candidates who were obviously qualified for high school work.

A second solution was actually followed for a time: in Hart's words, "While we continue to examine on the same branches that we did in 1838, we ask questions that are more difficult..."(43) But he acknowledged that this degree of flexibility had been stretched to the limit. So the answer he proposed and the board adopted was limiting the pool of applicants by raising admissions standards. Referring again to the table, this policy seems to have been quite effective. The small increase in standard in 1847 brought about a decline in applicants but only for one year. But the 1849 course change (reinforced by the rise in the minimum age in 1851) brought about a permanent decline in applicants to about 320 for the rest of Hart's term. This change allowed him to accept a high percentage of applicants -- in the 70s and 80s as opposed to the 60s -- without increasing the number admitted.

The other reason he gave for supporting higher requirements was that they would promote what he saw as a "constant process of improving upwards. The Primaries are to be improved by elevating the Secondaries, the Secondaries by elevating the Grammar Schools, the Grammar Schools by elevating the High School."(44) Hart in other words looked for an effect almost precisely opposite to the one apparently sought by grammar school principals and their sectional boards. Instead of tending to equalize grammar and high school curricula, the changes would preserve the difference between them by elevating both; instead of reducing the competitive pressure on the masters it simply moved them to a higher instructional level. The figures on candidates seeking admission seem to bear out Hart's view of the matter. Even with tough new standards to meet, there were throughout the 1850s on average 320 boys every year competing for 230 seats at Central, boys who apparently felt that the high school still had something very positive to offer which could not be found at their newly elevated grammar schools.

Two conclusions can be be drawn from the foregoing discussion. One is that establishing a rigidly bureaucratic procedure for entrance was in part pushed on Hart by defensive considerations -- the need to erect a fortress of fairness to withstand assaults generated by the exam's controversial organizational effects. The other is that, since the procedures were not integrated into a larger bureaucratic structure, the school could use them to defend itself in whatever manner it saw fit. The actual administration of the exam became quite quickly a matter of rigid formality, but the way the exam was designed and the ways it was used showed remarkable flexibility. Although the controllers set the courses to be tested, it is important to remember that the school had perfect freedom in writing and grading these exams, a freedom exercised, Hart tells us, in order to regulate the degree of difficulty of questions and thus set the school's own standards for admission independent of the course requirements. Another form of flexibility closely related to this one is never made explicit but is nonetheless important. Until 1868 (when all rules changed) the high school had the power to determine what constituted a passing grade, which allowed the school to pick as many students as it wanted without regard for any consistent (bureaucratic) standard.

What these two forms of flexibility meant was that the high school was able on its own initiative to control the number of students it chose to admit in a given year. We have already seen how this power was used to deal with influx of candidates during the 1840s, but I would like to propose a more general interpretation than this. It is my argument that the high school administration used this power during the 1840s and 1850s as a political weapon. There is no documentary evidence that this is true but the statistical evidence is highly suggestive. It appears that whenever the school came under heavy attack it sought to undercut its opposition by admitting larger classes. In order to examine this point I will review briefly the history of controversies surrounding the school during the Hart years and then compare the timing of these events with the table showing how many students were admitted.

In 1842 Hart arrived at the school in the thick of the charges of elitism that had helped drive off Bache. He requested a thorough review of the school by a panel of 20 outside experts who spent almost two weeks examining the students in writing before issuing a report of full support. In 1843 and 1845 two professors, Oliver Shaw and John Frost (Bache's nemesis), were asked to resign, no reasons given. In the latter year a bitter political struggle developed in the press and in the county board over Central's appropriation, which finally passed by one vote. In 1850 the county board appointed a special committee to review the school and it returned with a glowing report.

The year 1854 was a big one for Central High School and for Philadelphia. The school moved into a new larger building at Broad and Green Streets while the many municipalities of Philadelphia county were consolidated under a single city government. This also meant a reorganization of the school system under which each of the city's 24 wards would elect its own school board, which would in turn send one member to sit on the board of controllers. In addition this was the year that nativists swept the ballot, inaugurating a period of political unrest in the city which helped to disrupt policymaking and destabilize the board of controllers: of the 24 controllers in 1854, only three remained four years later.(45) For the first time Hart had to face opposition from within the board that had always in the past provided him with unquestioning support. In addition the new city councils began in 1856 to cut the high school budget, forcing Hart to retrench.

Hart himself helped identify the years of greatest controversy during his administration by collecting a scrapbook of press clippings which he titled "Record of the Wars of 1842, 1845 and 1856."(46) To these three years I would only add 1854, the year of great unrest and uncertainty. Referring to Table 1.1, it is striking to note that all four years were characterized by unusually large increases in the percentage of candidates admitted. In 1842 the proportion rose to 73%, the highest rate in the first 13 years of the school; this high acceptance rate on top of a sharp increase in the number of candidates produced a 50% rise in the number admitted. The rate of increase in 1845 is less dramatic but was still enough to swell the entering class size despite a drop in candidates. The largest increase in percentage admitted (aside from the 1851 change accounted for by new requirements) was in the pivotal year of 1854 when the rate went from 70 to 80% in spite of the stability in the size of the candidate pool. Finally in 1856 the rate went from 80 to 87%

With the sole exception of 1851 therefore, the four years of sharpest increase in admission rate were the four years under which Hart and his high school were most directly under fire. Under these conditions it seems quite justifiable to assert that he manipulated high school admissions in response to these events. Considering the nature of the criticism leveled at the school -- that it was exclusive, a rich boy's school; that its admissions were unfair and favored certain schools -- such a response would seem to have been both politically astute and perhaps quite effective. When a school is accused of being over-selective, it may be a wise tactic to relax selection standards for a time.

To summarize, the high school was spreading bureaucratic procedure within the school system during the Hart era, but the organizational structure of the system was far from bureaucratic at the time. Instead the schools were characterized by a decentralized formal control structure which lacked both an administrative staff and a hierarchy of authority. However a centralized informal structure of power emerged around the high school, based on its ability to spur competition over admission among students and teachers alike. I propose to call this pre-bureaucratic structure of Philadelphia's schools a "market structure" of schooling, since the key to its effectiveness was the high school's consumer appeal in the educational marketplace.

The growing public opposition to the high school coupled with the lack of support from the board ultimately provoked Hart to leave. In 1858 the controllers launched an investigation into the cost of texts and supplies at Central, and in October of that year quite abruptly Hart announced his resignation, effective immediately. Professor Vogdes was appointed acting principal. A month later Hart received a farewell tribute from the students for whom his parting words were a warning against anyone

> who does anything to malign or injure the High School, or who tries, by a miscalled economy, to

> embarrass the operations of that noble system of public schools of which the Central High School is the crowning glory.(47)

To end this account on a more positive note, the high school won a unique status for itself during Hart's reign. In 1849 the Commonwealth of Pennsylvania granted Central the power to award academic degrees to its graduates. Hart immediately established a policy of conferring the bachelor's degree on all graduates of the four-year course and the master's degree on selected distinguished alumni. In keeping with this quasi-collegiate status the school soon began referring to its teaching staff as the faculty and its principal as the president. The implications of these changes for the valuation of the high school's credentials will be explored in chapter four; the consequences for the internal governance of the school will be discussed in chapter two.

4. MAGUIRE ADMINISTRATION: 1858-1866

Nicholas H. Maguire was born in New Jersey, received an A.M. degree from St. Mary's College in Maryland and taught in private schools for about 10 years. Then in 1842 he was appointed principal of the Coates (later called Hancock) Grammar School at Twelfth and Fairmount, where he remained until being chosen to head Central High School. He was an unusual choice for several reasons. First, he was an Irish Catholic in a city and era rife with nativism. Second, he was the only grammar school principal ever to be chosen for the top position at Central. The ladder of promotion led such men under normal circumstances into a high school professorship instead. Both of these factors made Maguire's job difficult and they were exacerbated by the circumstance that he had won out over two senior members of Central's faculty, neither of whom took defeat lightly.

It is not altogether clear why the controllers chose him, although it is possible to identify some of the elements of their thinking. Consider that Washington J. Jackson, the high school committee chairman that year, was one of Maguire's former students. Also consider merit, as defined by the standard of John Hart. In Philadelphia's hierarchy of schooling, a successful grammar school master was one who got a significant number of his students admitted into the high school. In these terms, Nicholas Maguire was arguably the most successful of all the city's grammar school masters during this period. There were others, though not many, who sent more students to Central than he did; but sheer numbers were affected as much by character of neighborhood and nearness to Central as quality of instruction. It was in the percentage of candidates admitted that Maguire shone most brightly. While the average rate of admission during this period was 70%, the rate for Hancock students was 76% and no other grammar school bettered it.(48) It seems quite plausible that the controllers decided to use this competitive standard as the basis for selecting the high school's own leader. It would not be the last time that Central would be forced to swallow a dose of its own prescription.

Maguire's most dramatic change was instituted almost immediately after taking office when he halted the practice of deducting misconduct demerits from a student's academic grade. He felt this move was required in the name of justice, since the two qualities being measured were not in reality closely connected. "The brightest scholars are not always the most decorous; nor do the most docile always exhibit the highest order of talent."(49) (See chapter four for further discussion of this change.)

A number of important changes in school system organization were made during this eight-year period, but nearly all of them were on the initiative of the board of controllers. In 1859 the high school committee sponsored the first of a series of competitive examinations for professor candidates administered by outside experts, replacing temporarily the old system of relying on the recommendation of Central's principal.(50) In 1861 the board dropped algebra from the high school entrance exam and banned its teaching in grammar schools. There is no good evidence about why this happened: it may have been a dramatic reversal of the 1849 general elevation of the schools or it may just have been a response to declining high school enrollment during the Civil War.(51)

In the same year the controllers began to express worries about the pressure of study on young children and established a ban on grammar school homework of more than one and one-half hours. In 1863 etymology was added to the entrance exam and principles of arithmetic, a notorious rote-memory subject, was dropped.(52) In 1864 a special committee of high school teachers and grammar school principals recommended the establishment of a Board of General Superintendence made up of grammar school principals to take charge of elementary schools. The controllers rejected this request but it marked the start of a continuous campaign by forces within the school system and the city at large to give Philadelphia a superintendent of schools.(53) In 1865 an out-of-town editor inspected the school system and wrote a report highly critical of the way useless information was being crammed into the heads of grammar school students in preparation for the high school entrance exam.(54)

Two very important changes occurred in 1865. The state passed a law requiring the controllers to do something they had been wanting to do for years: examine all teacher candidates and certify those who are qualified.(55) Teachers already at work were unaffected and sectional boards still had the final say on hiring -- much to the continued annoyance of the controllers -- but for the first time the latter were empowered to limit the possible choices. Certifying exams were carried out by high school professors and grammar school principals under the supervision of Central Professor Zephaniah Hopper.(56) In another action that year the controllers seemed to be emphasizing the separate and unequal nature of the relationship between grammar schools and the high school. They formally barred the former from re-admitting students who had been promoted to the high school and also from teaching any high school subjects.

The significance of these events was easily lost in the midst of the series of destructive internecine struggles that racked Maguire's administration and eventually cost him his job. It all began with a series of investigations following on the heels of those that plagued Hart. In 1859 the controllers investigated charges whose nature is unrecorded and one professor was asked to resign.(57) One year later the board investigated charges that some professors were feeding questions to selected grammar school masters. Then in 1861, the high school committee looked into accusations that the school and some of its professors were inefficient, wasting the time of students in the pretense of study. It asked Maguire to make "a candid exposition of what he believed to be the causes of its inefficiency." (58) He did just that, singling out three professors in particular for harsh criticism. The committee interviewed a number of faculty members and concluded that the men should be fired.

This action prompted two of the three to file counter charges against Maguire. The result was an extensive hearing held in 1862 at the high school for the purpose of receiving formal testimony from all parties. The essence of the charges levied against Maguire during the course of this proceeding was that his new system of discipline had ruined the order that had prevailed under Hart and that his manner of governance was dictatorial.

The board of controllers voted to support the principal and confirm the earlier firings, but Maguire's problems were by no means over. One of his antagonists on the board, James Freeborn, took over as chairman of the high school committee in 1862, retaining this post for most of the next 20 years. Meanwhile Maguire's counterpart at Girls' High and Normal School was also under fire. Principal Phillip Cregar of that institution was censured by the board in 1864 for unfairness in the entrance exam and was fired in the following year after an investigation into the same charge.(59) Then early in 1866 the city councils generated more furor about the two high schools with over a third of the members voting to stop all funding for them. This led the controllers to institute another formal investigative proceeding at Central. The hearings touched on every aspect of the school's life -- governance, discipline, grading, teaching styles and internal organization -- and Maguire's opponents far outnumbered his supporters.

At the close of these hearings the committee recommended and the board concurred that a complete reorganization of the high school was the only answer to its problems. Every position at the school from principal to assistant was declared officially vacant. Maguire returned to being a grammar school principal and remained in that position until his retirement in 1894. (A detailed account of the Maguire hearings is provided in chapter two.)

5. RICHÉ ADMINISTRATION: 1866-1886

In the summer of 1866 George Inman Riché was appointed by the board of controllers to be Central's fourth president, assuming a title that came into general use in this period. Like Bache and Hart he was a young man for such a job at the age of 33 (Maguire had been 44), but in other respects the board seems to have sought out a man as different from his predecessors as possible. A scientist-educator and two professional educators were followed by a lawyer-politician who had neither headed a school before nor even taught in one. Riché was born in Philadelphia to a political family. His uncle was John Swift, a Whig who occupied the mayor's office for 11 years during the 1830s and 1840s. He attended public schools and in 1851 graduated from Central High School, delivering the valedictory address. Riché was thus the first alumnus to preside over the school. Without delay he entered the study of law in the office of one of Philadelphia's most prominent lawyers, George M. Wharton. A wealthy man by birth and a Democrat by persuasion, Wharton was the chairman of the high school committee for the first 10 years of the school's existence and afterwards served three different stints as president of the board of controllers.

Admitted to the bar in 1854, Riché began involving himself in public affairs including Central's very active alumni association. After being elected to his sectional school board he was sent as representative to the controllers between 1860 and 1862, during which time he sat for one year on the high school committee. After a brief career as paymaster in the army, he was elected in 1864 to the Philadelphia common council where he served until his appointment to the high school.(60)

Choosing Riché to head the high school makes sense if one accepts the notion that from the controllers' view the key problem confronting the school was political rather than strictly educational. While Maguire succeeded in alienating both the faculty and controllers in the course of his short term, Riché served his most of his 20 years under conditions of near-perfect harmony. In short order he was able to draw together the faculty behind his leadership, men had recently been at each other's throats and many of whom had been the young man's instructors.(61) At the same time he established and preserved the best relations ever between president and controllers through his close association with the chairman of the high school committee for most of his administration, James Freeborn.(62)

To the extent that he pursued change at all, Riché adopted a gradualist approach.(63) Ironically however the school nevertheless experienced a series of radical changes during his administration brought on by forces outside his control. Many of the most critical of these changes took place during the first three or four years of his appointment. It is this brief period that I wish to examine closely because it established a new role for Central within the school system and a correspondingly altered status.

The initial change, of course, was the faculty. The controllers took the extraordinary step of advertising in the newspapers of Philadelphia, Boston, New York and Pittsburgh for an entire faculty of 14 men, carrying through on their promise to proceed as though every post were vacant. But when they made their final choices, 10 incumbents were reinstated. Of the four who were not rehired, one was an older professor who had been strongly attacked by Maguire for incompetence but the other three were young men who had been hired by Maguire and who had been among his only supporters at the end. By a three-to-one margin therefore the makeup of the new faculty reinforced the idea that this reorganization was aimed less at the faculty than at its head. Another point of interest about the new faculty: six members (plus Riche) were graduates of Central, five of these having received no further education.

The event that touched off the major series of changes affecting the high school after the war was a state law passed in 1867 which ordered that the controllers thereafter be chosen not by ward boards but by the court of common pleas. This practice, which continued until the 1950s, could be interpreted as having two significant effects. On the one hand it freed the controllers from the drag of their former ward board constituency, allowing them to pursue policies geared to the needs of central administration without concern for parochial interests. On the other hand it left them without any political link with or direct influence on the still-powerful local boards. (64) In other words they were in a position to act more autonomously in pursuit of greater centralization within their rather limited legal mandate, but they were isolated from the political constituency they needed in order to have influence beyond this mandate. It was a situation that would seem likely to produce a more forthright and activist board yet also one that was more likely to act through administrative than political means. For the first time in the history of Philadelphia's public schools, central administration and politics were clearly differentiated from each other. The controllers became the champions of central administration and the ward boards the champions of politics, with each viewing the other as the natural antagonist. The lines for the Progressive-era struggle over control of the schools were thus already drawn as early as 1867.

The newly appointed controllers wasted no time in exercising their statutory freedom. In 1868 the board adopted its first complete course of study for the elementary grades. This 16 page document defined the nature of every subject and specified every text to be used in each division of the district's primary, secondary and grammar schools. (The board had always had this authority but had exercised it only cautiously in the past.) Neither high school was mentioned in it.(65) At the same time the controllers approved new pedagogical rules forbidding required homework and discouraging an over-reliance on recitation from the text.(66) In order to understand the significance of these changes on the high school, one need only recall that in the past the latter had always been the agent of board control over elementary schools. As Superintendent Brooks put it in his brief history of the school system, "The Course of Instruction in the Elementary Schools was for many years determined by the requirements for admittance into the Central High School."(67) But now a politically freed board for the first time could choose to regulate the elementary curriculum directly without the mediation of the high school.

The adoption of a course of study puts to a test the thesis expounded by Brooks and in this chapter. If

Central's admissions requirements were indeed aimed at governing elementary schools, then when the board took more direct control of these schools Central's admissions process would become superfluous. Under such conditions one would expect that admissions requirements would be subject to radical change as at no previous time. In fact such a change did take place. In 1868 the board adopted rules which completely altered the method of selecting students for Central. For the school's first 30 years admission was always on the basis of open competitive exams administered by the school itself. Only those with the highest grades could be admitted. But the new system changed this in two vital ways. First a student was to be admitted now merely on the basis of a certificate of competence signed by his principal and his sectional board. Second, a quota was imposed such that each grammar school promoted to the high school one student for each of its divisions (grades).

Comparing the old system of governing elementary school curriculum with the new, under the old way the key factor was Central's enormous drawing power. It was strong enough to draw support to the system and draw grammar school students into open competition over the chance for admission, a competition which in turn pressured principals to adjust their teaching to Central's requirements. This process gave the controllers a form of indirect control over the lower schools, a form grounded in the market principle of emulation. An important component of Victorian bourgeois ideology, emulation arises from the idea that the best form of regulation is self regulation and the best way to achieve the latter is through the competitive pressures arising from pursuing a valued reward. Central was the reward, its exam the pressure and a self-regulated elementary school system the result.

However after the 1867 law, I suggest that the controllers discovered they were now able to issue curriculum directives to the elementary schools and that such a process was considerably more thorough and efficient a method of control than emulation. One need only recall the range of problems which competition had brought with it -- including the angry reactions of grammar schools and sectional boards, recurrent charges of unfairness and elitism and the encouragement to cramming. (On this last point it should be noted that the board's 1868 pedagogical reforms were a direct attack on cramming, i.e., memorizing from texts for later recitation.) The timing of these actions is important also in another way. They occurred when Central's attractive power as a prize worth competing for was at its very weakest -- at the close of a decade of being attacked, investigated and at last completely reorganized. Also these same events made it difficult for the high school to demand that the board retain the school's traditional prerogatives.

In addition to the course of study and quota system a third blow fell on the high school in the fateful year of 1868. The controllers established a clear and formal grading system in the schools for the first time. The course of study marked off each of the lower schools -- primary, secondary and grammar -- into four divisions of one-half year each for a total of 12 divisions and six years. But what was threatening to the high school was that the larger grammar schools were required to set up a fifth division above the other four to be taught by the principal and known as the "senior class."(68)

It should be recalled that in 1849 the board elevated both the grammar and high school curricula and then in 1861 backed off from some of these gains. However the designation of a senior class in 1868 had a very different character from the earlier experiment: for the first time the controllers through these classes were permitting grammar schools to offer courses that were at the same time being taught at the high school. Such previously prohibited subjects included algebra, anatomy and natural philosophy. These senior classes were truncated alternative high schools, as the board's new rules made clear:

> Pupils who shall have completed the course of studies as prescribed for the First Division of

> the Grammar School, may be promoted and admitted either into the Senior Class of the Grammar School, the Boys' Central High, or into the Girls' Normal School, respectively, upon presentation of a certificate of examination signed by the Principal and Visiting Directors of the School...(69)

As if this weren't enough, students who successfully completed their studies in the senior class were to receive a diploma at graduation; and in 1877 the program was extended to two years.

This third development has in a measure already been explained. Central's loss of power made it difficult to fend off such a territorial intrusion, and its loss of attractiveness made a series of what were in effect junior high schools relatively more appealing. Also with the abandonment of open competition as a necessary component of board policy, there remained no solid reason for keeping Central High School in splendid isolation. On this last point, one must remember that Central more than any other institution helped to promote centralization in the school system by being the endpoint of a city-wide process of emulation. The centralizing and competitive principles were indistinguishable from each other during its first 30 years. But when the board suddenly in 1868 adopted a course of study, a quota system and series of senior classes, it was making a clear statement that exerting central control was its goal and that emulation was a once fruitful but no longer appropriate means of achieving that goal. This left Central in limbo, having lost both its favored status within the system and also its traditional role.

Surprisingly, President Riché responded in print to none of the three innovations. As for the senior class issue, it may have been that he saw it as one way to relieve Central's overcrowding problem, which he complained about frequently during his annual reports of the 1870s. (It should be recalled that Hart had supported the upgrading of grammar school curriculum in 1849 on these very grounds.) Table 1.2 shows that the high school was under pressure from the rapidly growing number of students in the city's school system. Between 1850 and 1870 Philadelphia's public school enrollment grew 78% (from 45,383 to 80,891) while Central's student population was virtually unchanged (it went from 485 to 489). From its low point in the aftermath of the Civil War, the school's student body had been restored to but not beyond pre-war levels by the 1870s. As a result, Central's share of the city's students dropped to almost half of its 1850 level. Without the senior classes to draw off much of this excess demand, the school would have had to increase in size dramatically. It appears from the table that because of the senior classes and the later manual training schools, Central managed to avoid increasing is share of the student population until just before the turn of the century.

One way of explaining Riché's silence on the course of study issue, which had such a strong impact on his school, is through the speculation that the Central faculty helped write the new program. This is plausible in light of the fact that the board's Committee on the Revision of Studies which released the course of study -- made up of board members, who were lay volunteers -- was not likely to have actually written it. Such a task was most probably delegated to a group of professional educators, and during the Hart era that group would have assuredly been the high school faculty. But this was not the Hart era; and although we do not know who devised the 1868 course of study, it is known that the revisions that took place in 1870 and 1877 were made by a committee of grammar school principals (which included Nicholas Maguire in the latter year) but no high school professors.(70) This situation reflected a new division of labor between high and grammar schools under the terms of which Central was to devote more time to its internal affairs and less to administration of the school system.

On the issue of admission by certificate and quota, Riché also made no comment in the reports issued during the first dozen years in office. His silence here is even more difficult to explain than it was in reference to the other two changes. The exam had always been the key to the high school's prestige and power. One good possibility is that a man as politically astute and well-connected as Riché may well have disdained public complaining in favor of private influence. If so, then he was rather successful; for in 1877 the Board of Public Education (the controllers took a new name in 1870) reinstated the entrance exam and placed administration of it once again in the hands of the high school faculty.(71)

For the first part of this chapter Central's admissions process was viewed in terms of its effects on the school system. But the events of 1868 make clear that the nature of this process also serves as a good barometer of the high school's status within the system. To the extent that the form of admissions approached the Hart-era model, with admission dependent only on one's score in the high-school-administered exam, then it could be seen as indicating a school that was promoting rather than succumbing to centralized organization. However to the extent that the high school lost control over these aspects of admissions, then perhaps it was becoming incorporated into the organization it helped create.

For the last third of the nineteenth century this barometer fluctuated wildly. Such a situation would seem to indicate a continuing struggle which kept moving the marker back and forth without a final resolution. Unfortunately it is not clear exactly what the terms of this struggle were or even who the combatants were. The reason is that the information about the changing admissions process comes not for the most part from the explanatory phrases of board and high school presidents in their annual reports but in the lawyerly language of bureaucratic directives. In the mid 1860s the board began to publish a list of formal "Rules of the Board" at the end of every annual report. Central's barometric pressure therefore has been recorded from the year-to-year changes in regulations governing admissions to the school.

The 1877 rule represented a partial restoration to the high school of its former position. The mandated procedure had qualities of over-complexity and inner contradiction which give it the appearance of an uneasy compromise. As in the old days all students seeking entrance were required to take an exam given by the high school; the certificate system was abandoned. Also in line with the old method, the board set the subjects to be tested. But in addition it named the specific texts from which the questions for each subject could be drawn, and it defined a minimum passing grade. Anyone receiving a 60 of higher would be considered qualified for admission even if there were not enough room for him. The final element of this package and the one that is most difficult to integrate smoothly with the rest is this: the quota system was kept. Apparently it worked in the following manner: if the quota for a particular school was eight (at the rate of one candidate for each division) then Central had to pick the best eight students who applied from that school as long as they passed the exam. If fewer than eight passed in one school then more than the quota could be picked from another school which had an excess of students with passing grades.(72)

Riché expressed immediate pleasure about the change, but by the following year he was already complaining in his report that the passing average was set too low, leaving him with a school overcrowded with underprepared students.(73) Fortunately for the school, the man who became president of the board in 1879 and served until 1889, Edward Steel, was a strong supporter of the school and its exam. Entering office as an administrative activist, he was the man who finally brought a superintendent to Philadelphia. He proudly announced his view of the purpose of the entrance exams: "In our present organization the annual examinations for admission to [the high schools] is the only competitive test and virtual examination of our grammar department."(74) In line with this thinking he went on to support the abolition of quotas and the reinstatement of admission on the basis of merit alone (although he never achieved either).(75)

Encouraged by this clear re-statement of Central's traditional role in the system, Riché proposed in 1883 two alternative plans. One called for admission by average only; the other, which he seemed to consider more realistic, required raising the minimum score to 65, testing on subjects from the thirteenth grade and accepting students only from the senior class (grades 13 and 14). The latter plan was passed by the board. This seemed to be another step in the direction of restoring Central to its old position and it even used the time-honored technique of raising admission requirements to accomplish this end. In fact while describing the effects of this plan, he even sounded Hart's old theme -- that higher standards of admission tend "to stimulate the entire school system and to elevate all the schools to a higher plane of effort."(76) However, the quota system, now in its fifteenth year, was retained.

Two years later there was another change, but this time the new superintendent, James MacAlister, was involved. Hired in 1883, he had focused his attention on the elementary schools to which his authority was mostly limited.(77) But in 1885 a new exam rule appeared which seems to bear his touch. Most important, from now on he would write the exam not the high school (he had already taken over the promotional exams of the lower schools). The high school would admit only from the twelfth grade and the exam would test at that level, so that once again the senior class was placed parallel to the high school rather than preliminary to it. The list of subjects to be examined was simplified and modernized (e.g.," etymology and defining", "principles of grammar and analysis of sentences" and "parsing" all became "language").(78)

It is difficult to explain at this point why the changes took place when they did but it is clear that, as an indicator of institutional standing, Central's admissions procedure reveals a situation best described as unstable. From the depths of the 1860s the school seemed to have been recovering strength by the middle of Riche's term, hitting a peak at just the moment that a superintendent arrived on the scene and then trailing off. In order to understand more fully the implications of this indicator it will be necessary to trace out its path to the end of the century and in the process discover more fully what happened to the school as a whole during this period.

But one explanation suggests itself at this point. If in 1868 the board set out to govern the system by means of bureaucratic directive rather than through the drawing power of the high school, it may have discovered that these directives were easier to issue than they were to enforce. Until 1905 local boards continued to have control over the selection of teachers and the day to day operation of neighborhood schools. The board of education could pass a course of study but it could not insure that this plan was being followed in the city's classrooms. Under these circumstances a partial return to the old emulative system may have seemed desirable. The new exam procedure would help generate pressure from below as parents urged local schools to prepare their children for the exam while at the same time board directives would exert pressure from above. Such a combination of market-based and administrative controls may well have been a prime characteristic of the Philadelphia school system during the period between 1868, when the board discovered the possibility of intitiating a bureaucratic structure for the system, and 1905 when it was finally enabled to accomplish this.

After 20 years in office, George Riché resigned in 1886. As he explained later in a letter to a former student, "I severed my connection with the school after mature deliberation. Certain tendencies were becoming manifest with which I was not in sympathy..."(79) A historian of the school mentions several such tendencies: growing disharmony on the faculty, innovations by the superintendent, lack of response to an appeal for a new building to relieve overcrowding. But the one he stresses is the decision of the board to try again the system of hiring faculty by means of competitive examination as was done in the 1860s. A candidate he wanted was rejected by this process and he chose to quit.

It is a slightly puzzling but still noteworthy fact that all of Central High School's first four presidents left office either under fire or under protest or both. The job seems to have been intrinsically controversial. Perhaps in part this was because of the high visibility which the school's founders so successfully sought for it. But another part of the cause may be found in the multiplicity of possibly irreconcilable constituencies that these men had in some way to satisfy: board, faculty, grammar school principals, parents, students, public officials and general citizenry. Under these conditions it may well have been Riché's skills as a politician that allowed him to last as long as he did in this demanding job.

6. TRANSITION -- TAYLOR, HOPPER AND JOHNSON: 1886-1894

The period from 1886 to 1894 represents a major turning point in the history of Central High School. In this short span of time the school's administration succeeded in reversing the school's direction, overcoming 50 years of momentum toward a uniform and increasingly practical curriculum in favor of a course of study that was both highly differentiated and college preparatory. Presiding over this transition was not one man but three -- Franklin Taylor, Zephaniah Hopper and Henry C. Johnson.

The high school committee's choice as the man to replace Riché was Franklin Taylor, who had the twin distinctions of being at 68 the oldest of Central's presidents and also the first chosen from among its faculty. These two characteristics are probably closely related. For a school whose leaders had always been quite young, the choice of such an old man would seem to signal that this was intended as an interim appointment until a permanent replacement could be found. Under these terms an insider would be be able to provide continuity.

But beyond such considerations Taylor is an interesting choice because his background was in such striking contrast to his predecessor's. While Riché was a high-school educated lawyer and politician who never taught a day in his life, Taylor was a university-trained and thoroughly professional teacher and educational administrator. He was born into a family of Hicksite Quakers which settled in Chester County in the time of William Penn and whose most famous member was the world-renowned poet, lecturer and essayist Bayard Taylor.(80) The prior career of Central's new president was marked by a breadth of experience greater than any occupant since Bache and a degree of educational professionalism greater than any except Hart. He attended both Harvard and Heidelberg Universities (acquiring an M.D. along the way) and traveled extensively throughout Europe and Asia. He had been superintendent of schools in Chester County and in addition had been a teacher in a number of different settings -- including private schools, West Chester Normal School and Central, where for eight years he taught English literature.(81)

However after several months in office, Taylor was stricken by an illness from which he never recovered, although he lingered on for several years. In another interim move, the committee turned again to the faculty and appointed Professor Zephaniah Hopper acting president, a role that he would play for a year and a half and again for several months after his successor's resignation. Hopper was a prominent and long-lived figure in Central's history. Entering the school as a student in its second class, he graduated at its first commencement and went on to become for ten years principal of Jefferson Grammar School. After showing considerable success at promoting his students to the high school, he won promotion himself to the Central faculty where he served for an astounding 59 years, finally retiring at the age of 89. In addition to teaching mathematics and occasionally acting as president he also supervised the teachers' certificate examinations for the school district from 1865 to 1880 and was principal of the high-school sponsored Artisans' Night School from 1877 to 1897.(82)

One might well ask why Hopper was not made president on a permanent basis, given the fact that his qualifications resemble those of several of his predecessors. Like Maguire he rose to the top of the meritocratic career ladder in the public school system and like Riche he graduated from Central and never received further education. However by the 1880s the high school committee seemed to feel that the presidency now required a higher level of attainment in both education and previous occupation. Unlike Maguire, Riche and Hopper, the two men who were picked as president in this decade -- Taylor and Johnson -- were university educated and had experience as both teachers and administrators of higher level institutions.

Henry Clark Johnson was appointed president in 1888, the year of the high school's semi-centennial, and served for five years. Born in New York, he attended in succession a private academy, Yale Law School, Cornell (where he received an A.B.) and Hamilton (where he received an LL.B.). He joined the New York bar but turned immediately to teaching. He became headmaster of a private school in Philadelphia and another in Long Island, then principal of the Paterson (N.J.) High and Normal Schools and finally professor of Latin at Lehigh University. At the age of 37 he was called to the top post at Central High School, although not as the committee's first choice: the head of Lawrenceville School had already rejected the position twice because of the lack of harmony on the faculty.(83)

In the two years since Riché's departure, a majority of the board and of the faculty had expressed support for changing Central into more of a college preparatory institution -- a change which Riché had staunchly opposed. Therefore shortly after his inauguration, Johnson produced a wholly new curriculum for Central which turned away not only from the school's long term trend toward increased practicality but also from its 30-year tradition of uniformity. He reintroduced the notion of electives in the form of free selection from an array of five alternative self-contained courses of study -- classical, regular, chemistry, physics and scientific. The first four of these were all variations of the regular course which was designed to prepare students for college. Only the scientific program was intended as terminal. As a reflection of this new college orientation, nearly all of the professors hired during Johnson's term and afterward were themselves college educated. (An extended analysis of the transformation of Central's curriculum is provided in chapter four; of its faculty in chapter two.)

During this transitional period three changes took place which affected the character of Central's admissions. One such was the elevation of the minimum grade required to pass its entrance exam from 65 to 70. This move toward greater selectivity would be interpreted as a important organizational victory for the school if it weren't for two major setbacks suffered four years earlier. In 1887 a state law was passed requiring school districts to admit into their high schools all qualified students under the age of 21.(84) This law compelled both the boys' and girls' high schools in Philadelphia to expand their enrollments considerably.(85) If one compares Central's situation in 1887 to that in 1898 one finds that total enrollment doubled (from 696 to 1,307) while the number of teachers tripled (from 16 to 47), although the sharpest increases did not begin until 1894. With rising demand backed now by legal compulsion, the school could raise its entrance requirements and still find itself swamped with qualified applicants. Manipulation of these requirements, which in the Hart era had been an expression of organizational aggrandizement, had become by Johnson's time defensive measures and not very effective ones at that.

Another setback for the school came in the form of direct competition. In 1885 the board of education established Central Manual Training School and five years later created Northeast Manual Training School. Although it would be several years before these two institutions would be referred to as high schools, it is clear that they were acting as such from the very beginning -- presenting themselves to grammar school graduates as a more practical and briefer (three-year) alternative to Central's academic training. A formal parity was brought about among the schools by an 1887 change in board rules which established that Central High School, Girls' High School and Central Manual Training School (Northeast was included later) would all have the same requirements for admission. Applicants to all four schools would have to complete the grammar school course, be tested in the same subject areas, meet the same passing grade (65, then 70) and fulfill the same quotas.(86)

By all appearances the school that once dominated other schools in the system was now made equivalent to at least some of them, that the leader in the movement toward centralized authority had finally been leveled by it. Left unresolved however is the character of that leveling. For this may still have been a classic case of leveling up, in which Central as an object of emulation drew the level of instruction in the district upward to the point where it produced its own rivals. If so -- and the fact that the school simultaneously elevated the standards for its curriculum and its faculty would seem to support this view -- then Central High School should not be seen as the sorry recipient of is own medicine. Instead the high school may well have succeeded in fulfilling the aims instilled in it by its founders, to lead a lowly common school system to higher ground.

Despite his success in transforming the curriculum, President Johnson came under attack from the school board and the public for his inability to quell the disharmony within the high school faculty. He finally chose to resign -- making him but the latest in a growing line of Central presidents who quit under attack. Abandoning for good the life of the educator, he returned to New York for the practice of law and by the turn of the century he had established himself there as a prominent figure in the area of corporate taxes.(87)

7. THOMPSON ADMINISTRATION: 1894-1920

During Johnson's last month in office no fewer than five members of the faculty began openly competing over the right to replace him. The two most serious candidates were Edwin J. Houston, an alumnus and professor of natural philosophy and the much younger Albert H. Smyth, an alumnus and professor of English literature. With the Associated Alumni backing Houston and with the high school committee behind Smyth, no clear concensus could develop on the board of education in support of either man. As bad temper grew on both sides, the board finally turned to an outsider.(88) It chose Robert Ellis Thompson, a man who would preside over Central High School for 26 years, longer than anyone before or since. They were not to be placid years. A man of stern principles and fiery temperament, he found himself locked in an unwinnable battle in defense of Central's age-old primacy and autonomy, vainly seeking to oppose the bureaucratic initiatives of a series of superintendents backed by the full forces of Progressivism.

Born in Northern Ireland, Thompson arrived in Philadelphia at the age of 13 and attended public grammar schools.(89) In 1859 he entered Central High School but left after one term for a classical school were he could prepare for college more quickly. In 1865 he graduated with highest honors from the University of Pennsylvania, delivering the Greek salutatory. Two years later he graduated from the Reformed Presbyterian Seminary and was licensed to preach. However like Central's other preacher-president, John Hart, Thompson never sought appointment as a full-time minister but directed his energies immediately toward teaching.

From 1868 until 1892 Thompson taught in a variety of capacities at the University of Pennsylvania. His academic field was political economy but he clearly perceived this less as a narrow specialty than as a platform for moral advocacy. The breadth of this interest were reflected in the range of positions he held while at Penn including instructor in Latin and mathematics, instructor in history, professor of social science, librarian, chaplain, dean of the Wharton (business) School and professor of history and English literature. Adopting a lecture style in which he proposed and then brilliantly defended controversial positions, Thompson soon became recognized as one of the most stimulating teachers at Penn. But his reach went well beyond the university. He taught at the extension school, he wrote articles for a number of magazines and he preached in a different pulpit every Sunday. As a result of this range of activity his biographer has asserted that Thompson was the best known and most respected teacher in Philadelphia.

The ideas which Thompson promoted from his many platforms come together in a series of his lectures published in 1891 under the title The Divine Order of Human Society.(90) This work is an extended argument for what he called "Christian sociology", which meant for him reforming the inhumane aspects of American social relations (in light of Christian principles) without disturbing the basic structure of capitalism. A blend of religious reformism and capitalist economics, this was the central idea which he promoted so vigorously to his many audiences and which he also sought to carry into practice.

Thompson's Christian sociology came into conflict with the trend toward professionalization and specialization spurred by the formation of the Wharton School in 1881.(91) Abruptly in 1892 Thompson and several other professors were dismissed by the trustees. Thompson was charged with three offenses: neglecting his university responsibilities for outside activities, failing to cooperate with educational changes (particularly those deriving from the Wharton School) and resisting specialization. His dismissal aroused enormous opposition from alumni, press and public but it was not rescinded, and he left Penn an embittered man.(92)

At first blush it seems odd that the school board would offer Central's presidency to a man who was recently and publicly fired. But one must recall that the core of his opposition was within academia while his support was found among a wide range of audiences outside the university, who were likely to consider his firing as less of a disgrace than a martyrdom. Besides, to the extent that the board really understood the issues involved in his departure from Penn, it might well have decided that a great teacher, social reformer and generalist would make a much more suitable high school president than a great scholar narrowly specializing in marginalist economics. His credentials may have appeared inadequate for a professor of economics at Penn but they compared quite favorably to his predecessors. Like Taylor and Johnson he was extensively educated beyond the high school level (his degree in divinity was no less relevant than Taylor's in medicine or Johnson's in law) and like them he had had a long career as an educator.

However the same qualities that made him the right man for the job in the eyes of both Thompson and the board made him the implacable foe of Philadelphia's bureaucratically minded superintendents. He had the misfortune of being Central's head during a time when Progressive reformers were aggressively pursuing a policy of extending bureaucratic control over the school system and consolidating it in the hands of the superintendent and a streamlined board. His position compelled him to defend Central's traditional autonomy against incursions from above and his stern moral principles led him to do so in a thoroughly uncompromising fashion. The result was that Central High School under the Thompson administration went through a series of major changes in its inner workings and its organizational status that occurred not because of him but in spite of him. Most of these changes originated in the superintendent's office and met with the virulent opposition of the president -- only to be adopted as system policy anyway. The old Central was a school without peer; by the time of Thompson's inauguration it had slipped to the status of first among equals; and by the time of his retirement it had fallen to the point where it was simply one among the city's many regional high schools.

Thompson started his administration on a forceful and positive note.(93) He instituted a number of important changes in the school's operations in a fashion that augured a more activist and less defensive presidency than the one that actually developed. However none of these changes was as radical as those brought about by his predecessor for the simple reason that Thompson was in general sympathy with Johnson's plan for the school, especially the new curriculum which he left largely intact. Most of his efforts therefore were directed toward augmenting, modifying and consolidating the structure he inherited.

At the very end of his term, Johnson had replaced the old mode of discipline, based on giving out demerits or "noting", with a form of honor system. Demerits had a long history at Central. Imported from West Point by Bache, their power was augmented by Hart who deducted them from academic averages. Maguire stopped the latter practice but preserved the system of noting for misbehavior and it continued largely unaltered until 1893.(94) Thompson showed little interest in either restoring demerits or preserving the honor system. Instead he established a Committee of Discipline within the faculty and all important disciplinary cases were referred to it for action.(95) The organizational consequences of this change were significant. Whereas the demerit system put disciplinary power in the hands of individual professors and the honor system put it in the hands of students, Thompson's system put power firmly in the hands of a small administrative committee. This points to a paradox in Thompson's organizational preferences. As president of Central High School he was in a position whose interests were tied to the support of both decentralized power in the school district and centralized power within the school. (The organizational effects of Thompson's reforms are discussed in chapter two.)

After Thompson had been president for only three or four years, Central High School found itself subjected to a series of major changes. The primary source of these changes was Philadelphia's late blooming but nonetheless powerful movement for Progressive education. Preparing the way for this movement were the centralizing and professionalizing initiatives of a variety of educators and reformers in the city, including the school board appointed after 1867, board presidents Stanton and Steel during the 1870s, and the early superintendents in the 1880s. The city's Progressive educational reformers emerged at the turn of the century as part of a nation-wide alliance of what Tyack calls "administrative Progressives."(96) The aims of this alliance were both ideological (pursuing "social efficiency" by tailoring curricula to the future job roles of the different social classes) and organizational (centralizing, professionalizing and streamlining the governance of school systems). Unfortunately for Thompson, these aims represented a major threat both to his principles and to the organizational interests of his school.

In curriculum, Progressives sought a high degree of differentiation within and, at the beginning, between schools with the aim of preparing students for different roles in life. Pushing the ideal of practical education beyond anything proposed over the years by Central presidents they called for separate programs in college preparatory, business, manual training and industrial education. Thompson had always rejected such a narrow view of the goals of schooling. One of the issues that drove him from Penn was his opposition to the Wharton School's shift away from general education and toward professional training.(97) And in his inaugural address he announced his own understanding of Central's purpose:

> We are here, first of all, for character building, and this great city looks to this school and to all her schools, each in its degree, for the training of those who shall take the places of the men of public spirit, social virtue, and reverent piety, whose names are the brightest spots on her annals...(98)

Reaching back to the common school reformers' vision of moral education, he presented a stark contrast to the pragmatic vocationalism of the Progressives.

Another major concern of Progressives was reforming the organization of the school system. The aim was first to abolish ward-level school boards, which they attacked as being under the corrupting influence of political bosses, and to concentrate governing authority in a small appointed central board. In addition they sought to remove administrative control of the schools from the hands of local board, teachers and principals and place it in the hands of the paid professionals on the superintendent's staff. This meant vastly expanding the reach of

Philadelphia's incipient educational bureaucracy to cover such areas as curriculum design, instructional methods, teacher certification and hiring and the general integration of the school system.

A start had been made in achieving these aims at the elementary level as far back as 1868, but by the time of Thompson's administration only minimal progress had been made in subjecting Central High School to such bureaucratic control. The superintendent never received full authority over the school until 1912 (99), a situation which left Central in an exposed position as the last major pocket of autonomy in the system and which made it a convenient target for bureaucratic assault by Progressives inside and outside the superintendent's office. As Central's president, Thompson had no choice but to resist these encroachments. Charging that Progressive bureaucrats were seeking "to set up an educational dictatorship"(100), He used the many forums open to him to respond to his antagonists. (101) He assessed the effects of advancing bureaucracy in these terms:

> The tendency of nearly all these innovations is to exalt the superintendency as the central and initiative power of the School System and to bring everything else into control. It is subsidiary to the idea of standardization, which seeks to reduce schools of the same grade to mechanical copies of each other in which no improvement is permitted which does not come from the central office.(102)

In spite of their president's staunch opposition to

Progressive reforms, a number of Central's professors were equally strong supporters of the Progressive cause. These men played active roles in the Public Education Association (PEA) -- the home base of the administrative Progressives -- and their careers did not seem to suffer for it. Three of them are particularly noteworthy. Franklin S. Edmonds, who wrote a book length history of Central, was a charter member of the PEA. One time president of the Teachers' Association, he was named principal of the evening school, then appointed to the first post-reform school board and later elected to the state senate. George H. Cliff, like Edmonds, wrote a history of the school, helped found PEA and was a member of the same school board. He became principal of the Girls' Normal School in the 1890s. And Cheesman A. Herrick, yet another PEA co-founder, was picked as head of the new commercial school at Central, as principal of the William Penn High School for Girls and finally as president of Girard College.(103)

It seems odd indeed that some of Central's teachers would be resolutely in favor of the changes while its president was staunchly opposed -- and that the latter should be joined in opposition by most elementary school teachers in the city and (according to Tyack) across the country.(104) In the past the high school's president and faculty had jointly promoted measures which promoted centralization of power within the district in the face of opposition from teachers at the lower levels. The answer to this puzzle is that the fight was not over the principle of centralization but over the organizational fact of dominance and subordination. Lower school teachers across the country were being subjected to greater central controls throughout the nineteenth century. Central's president and faculty on the other hand had for much of the same period been in the dominant position and thus were both the spurs and beneficiaries of centralization. But when Central was itself finally being pressured into subordination to the superintendent and the board, its head and his staff turned in opposition -- except those (like Edmonds, Cliff and Herrick) who saw the change as an opportunity for rising into supervision rather falling into subordination.

A series of events during the Thompson administration served to accelerate the decline in Central High School's power and autonomy which had been going on for 30 years at slower pace. What follows is a brief chronological account of these events.

In 1896 a change in admission rules opened Central's door a little wider with the result that its student population grew by 24% in just two years; by 1905 it had doubled, reaching a total of 2,000. The system of admission by both quota and exam that was pioneered 19 years before was retained, but all high schools were now required to admit anyone who scored above 70 instead of taking only the number of such students they needed.(105) One year later the board made the important symbolic step of changing the name of its committee on grammar, secondary and primary schools to the committee on elementary schools. And by 1898 secondary schools were formally merged into primaries as part of a reorganization which also brought the number of elementary grades down from 12 to 8.(106) It should be recalled that this over-elaborated hierarchy of schools and grades, crowned by Central, was for much of the nineteenth a major factor in stimulating emulation, thus giving the board indirect control of the "system" over which it had little direct authority. Now that more direct control was available to it, the more artificial elements of hierarchy could be dispensed with. By the same logic of course the unique status of Central could now be seen as an artificial inducement which was likewise no longer be required.

Also in 1898 the high school was compelled to accept its first major internal adjustment when a commercial department was added. Thompson was quite unhappy with this addition and agreed to it only when assured by the new board president, alumnus Samuel B. Huey, that it was a temporary measure that would last only until a commercial high school could be built.(107) Huey did indeed press for such a school but it was never constructed and the commercial department became a permanent part of Central. The curriculum of the commercial program was written by the superintendent, the first intrusion by that office into Central's course of study.(108) Designed to prepare boys for business, the commercial course was a move in the direction of vocationalism but was not itself simply vocational. It was a four year program which offered practical training through courses such as business methods and stenography but many of whose courses were from the school's traditional academic repertoire. Thompson adjusted the overall plan of studies to the new situation and the result was a four course array including classical, Latin scientific, modern language (scientific) and commercial options. The first three all shared the same classes freshman year while the commercial students were isolated in a separate track.(109)

Two years later another heavier hammer blow befell Central's institutional status as that old object of competition and subject of controversy -- the entrance examination -- died, never to be reborn. Starting in 1900 high schools were required to admit students on the certification of the grammar school principal alone. The latter was authorized to certify for promotion as many as

75% of his eighth graders, and only those remaining students who requested it were to be tested.(110) During many of its 62 years of existence the entrance exam played a critical role in the history of both Central High School and the Philadelphia school system. For the first 30 years it was the only means by which controllers could control elementary school curricula and the most effective means by which Central could maintain its dominance within the school system. The high school's attractiveness made it an instant object of emulation but the entrance exam is what turned this yearning into a narrowly focused scholastic competition, which in turn induced voluntary compliance with system guidelines by student and master alike. But then in 1868 a newly strengthened school board abandoned indirect emulative controls in favor of bureaucratic directives and the exam was summarily abolished. Resurrected nine years later it limped through the rest of the century in pair with a quota system which undermined its competitive purity and thus its power. Its ultimate demise signaled that the exam was no longer needed for the control of elementary schools which were already well under the influence of the superintendent. Now only Central remained to be brought under bureaucratic authority and in this endeavor the exam became an unwanted source of autonomy for the school; for this reason too it had to go.

Also in 1900 after long delays Central began moving into its new building across the street from the old one at Broad and Green. A massive four-story structure in the Norman style, it contained 60 classrooms and cost (including land and equipment) an unprecedented $1.5 million. By contrast the school's first building had cost $72,000 for nine rooms in 1838 and the second had cost $75,000 for 17 rooms in 1854.(111) Such a structure called for a grand dedication and one was arranged in 1902. Stretching over four days, the ceremonies were a well-orchestrated tribute to the glorious history of the school and to the success, industry and civic spirit of its alumni. Participants included scores of public officials, educators and prominent men who for the most part had attended Central themselves and who thus provided living witness to the breadth of the school's influence. Their speeches were later published by Edmonds in a volume that ran to 270 pages.(112) Without any doubt the event which marked the high point of these proceedings and which provided clear proof of the school's national significance was the appearance of President Theodore Roosevelt. With characteristic flair the president arrived at the school as part of a procession led by the First City Troop, spoke to the dignitaries assembled in the new auditorium and then stepped onto a balcony to address the students gathered on the street below, leaving them with the advice, "Don't flinch, don't foul, and hit the line hard."(113)

These dedication proceedings represented the high water mark of the Thompson administration. Never had Central High School appeared more elevated, more influential and more deserving of the title, School of the Republic. The speeches emphasized Central's unique institutional status as the school which took the best of today's students and turned them into tomorrow's leaders. Yet it was precisely this status that was in so much doubt in 1902. No longer was it the only high school in the city, no longer was it able to have any influence over the selection of its students and no longer was it in complete control of the content of its instruction. Perhaps this is why the dedication was on such a grand scale -- part of a more or less conscious effort to shore up Central's wavering position through an overwhelming affirmation of its past prominence.

One theme that was stressed by a number of speakers at the dedication ceremonies was the need to transform Central High School into the city college of Philadelphia. The issue was first raised by an alumni committee in 1896 and quickly won the support of Central's faculty and president along with Superintendent Brooks and board presidents Huey and Edmunds. Frequently referring to the example posed by the College of the City of New York, these men rallied around a plan which would have added two years of college courses on top of the current four year high school curriculum. This plan became a basic part of Central's institutional culture which was raised periodically during Thompson's long administration and also during the term of his two successors -- always provoking a flurry of speeches, committee reports and letters to the editor but never achieving its goal.

City college proponents encountered two major sources of opposition, the press and the Public Education Association. On one level the issues that divided the two sides were posed as the need for democratic educational opportunity vs. the need for social efficiency in education. Thompson and other Central supporters argued that a city college would allow wider access to higher education for those now barred by inadequate resources. But the PEA responded that since most Central students who went to college chose professional and technical schools, few would be aided by a two year liberal arts course; that since very few students graduated from the city's high schools each year, there was an adequate number of city-administered scholarships for those who needed them; and therefore that extending Central's course would simply be an unnecessary added expense.(114)

If however one shifts focus from ideological to organizational concerns, it appears that the argument over the city college was a new manifestation of the old battle over Central's status within the school system. A 1903 report by a faculty committee identified the issue precisely in these terms. After listing a series of reasons for adopting the six year course, the report put the issue this way: "It was a necessary move to keep Central High in the line of its traditional development and to restore to it its pristine position in the educational system of Philadelphia."(115) Given its slippage in status within the school system over the years, the argument went, Central needed a way "to restore to it its pristine position." And it quite naturally chose a way that was "directly in the line of its traditional development," a method for organizational status maintenance that was pioneered and perfected by none other that the revered John Hart, who most often referred to it as the process of "elevation."

The ideal of elevation lay at the heart of Central High School's original mission. It was in order to draw support to the common schools and raise their general level that Central was set above them as an example, an incentive and a goal. When it elevated its curriculum, the entire school system followed suit in response to the powerful pressures of emulation. Within this scheme of things, maintaining Central's elevated position served two ends: it provided the board with indirect control over the lower schools and it provided Central with a uniquely autonomous status within the system. For Central's supporters, therefore, the answer to the school's recent decline in status was simply to elevate its curriculum once again. What they failed to take into account, however, was that the old connection between Central's status and system control had been broken. Thus although the high school's faculty and alumni had good reason to pursue this change, the school system's administrators did not.(116) The high school's prestige was now largely irrelevant to officials who had more direct and reliable methods of influencing their schools. In the modern school system one elevated the lower schools by having the superintendent re-write their course of study and not by turning a high school into a college.

To Philadelphia's educational Progressives, the city college proposal must have appeared not only irrelevant and inefficient but also potentially dangerous. In their drive to rationalize the city's school system, Central remained as a pocket of resistance which continued by virtue of its vestigial autonomy. Their goal was to incorporate the school fully into the system and not to fortify its distinctiveness. As a result the PEA energetically opposed the plan for a six-year high school wherever it appeared -- and was quite successful in this effort.

In 1905 the educational Progressives won their first major legislative victory when a school reform law was passed by the state reorganizing the structure of control in the Philadelphia district. Under the conditions of this law the board of education was reduced in size from 45 to 21, its number of committees was cut from 31 to 10 and, most important, the authority of ward boards over the schools was sharply reduced. The author of this bill was Martin G. Brumbaugh, the man who was becoming the central figure in the city's movement for Progressive reform of the schools. When one year later he assumed the position of superintendent, he also became Thompson's chief antagonist. Remaining in office until he quit to run for governor in 1914 (he won), Brumbaugh took a much more aggressive approach to the superintendency than had his two predecessors. In part this it is because his new school law strengthened his hand considerably, but in part it is because he was deeply committed to the cause of Progressive reform. Anyone who held the position of school superintendent would be likely to act as a centralizer simply by trying to carry out the minimum requirements of the job, even if he were not actively pursuing this end. But Brumbaugh had a clear ideological vision about what was wrong with the school system and how to cure it and, unlike those who came before him, his remedy was to speed the system along toward bureaucracy. He was remarkably successful in achieving this goal. More than anyone else he was responsible for creating the modern bureaucratic structure of Philadelphia's schools.

Therefore given that Brumbaugh possessed more power, zeal and ideological clarity than his predecessors and that he pursued goals that were more threatening to both the interests of the high school and the position of its president, it is not surprising that Thompson immediately perceived him as his archfoe or that the perception was mutual. The two men fought continually for the next eight years in meetings and speeches and the press. At least the equal of his foe in zeal and ideological clarity, Thompson made a formidable antagonist; but as he lost one round after another to Brumbaugh, it became clear that he did not have the same degree of organizational and political power. Never conceding defeat, he continued the battle but with increasing bitterness.(117)

Once Brumbaugh was installed, a rapid series of changes rained on Central. In 1906 the 70-year-old committee on Central High School was replaced by the committee on Central High School and the manual training schools, which in turn shortly became the committee on boys' high schools. In 1907 Southern Manual Training High School was established. During the same year the board ruled that high school principals must give regular reports to the superintendent and the high school committees must consult with him.(118) The next year marked a shift in opinion as Edmunds and Brumbaugh came out for the first time against separate manual training and commercial high schools and in favor of comprehensive high schools which would combine the academic course with the other two types.

In the fall of 1910 Central opened two "annexes," one in Germantown and one in Frankford. They would later develop into Germantown High School and Frankford High School, but at this point they were distinctly subsidiaries of Central. Lacking principals of their own, they were under Thompson's leadership. Students from each of these areas who wished to attend high school were required to go to the local annex rather than Central's main campus in much the same way that students in South Philadelphia were channeled into the new high school there. The difference however was that annex students spent their senior year at Central and eventually graduated with its diploma. In a similar fashion and during the same year, an embryonic system of district high school for girls was established under the supervision of Girls' High School in West Philadelphia, Germantown and the Northeast.(119)

Then in 1911 the Progressives won their greatest legislative victory when they achieved passage of a school code embodying nearly all the reforms that they had failed to insert in the 1905 act. The new act codified all educational legislation, effectively abolished ward boards by turning them into boards of visitors, further reduced the board of education to 15 people, standardized curriculum and for the first time ever gave the board independent authority to levy taxes (up to six mills). During the same year a new compulsory attendance law was passed giving 14 and 15-year-olds the right to demand education, thus putting a strong pressure on the school district to provide high schools for these students.(120)

A leaner and more financially independent school board immediately passed a new set of rules which strengthened the power of the superintendent, particularly with relation to the high schools. For the first time he was given authority over both teacher selection and curriculum for these schools. Since the very beginning the boys' and girls' high school committees had had the sole power to appoint their own teachers. Under the new system they retained this appointive power but the superintendent first had to pass on the qualifications of any candidates.(133) As for curriculum, the past rule for the superintendent had been: "He shall...prepare a course of instruction for use in the elementary schools..." But the new rule removed this earlier limitation: "He shall prepare courses of study for the schools..."(122) Since

1883 Philadelphia's superintendent had really only been the superintendent of elementary schools, but in 1912 he was finally made head of all the schools.

Brumbaugh wasted no time applying his new powers. In April of 1912 he completely reorganized the city's high schools into a homogeneous pattern, and as a result Central's unique identity was at last totally submerged in mass of secondary schools. Prior to this time Central had managed to retain certain distinctions which elevated it above the competition. It was the only school in the city with a four year program offering both academic and commercial courses. Southern had academic and commercial courses in addition to manual training but it only extended for three years. Both the Central Manual and Northeast Manual Training Schools were limited to manual training and to three years.(123) Thus there had been in effect three ranks of high schools in the system and Central had held its accustomed position at the head.

But Brumbaugh changed all that. In one sweeping move all three ranks of high schools were made equal. Henceforth all these schools would have four-year programs, all would offer academic, commercial and manual training courses (the latter for boys only) and all would be known as high schools. In addition each school was given a sector of the city from which it could draw students. And since Central High School and Central Manual

Training School shared the same sector, the latter was merged into the former and became the high school's mechanic arts department. Suddenly the city of Philadelphia found itself with a rationalized system of comprehensive regional high schools. All of the distinctive traits that had characterized Central High School over the years, all of the special qualities that had been the boast of speaker after speaker at the recent dedication ceremonies, were washed away by Brumbaugh's leveling tidal wave. The school's old supervisory authority was long gone; its competitive entrance exams were recently lost. But the school had still managed to retain a portion of its old rank as the city's prestigious senior academic high school with a city-wide drawing power. No longer first among equals, it found itself one among many.

Thompson, of course, opposed the move but there seemed to be little he could do about it. He did ask for one concession -- a relaxation of district boundaries which would allow admission to Central for candidates anywhere in the city if they were alumni sons or sought a classical course.(124) But this request was never granted. Interestingly, it was not Central but Girls' High School which stood as the only exception to Brumbaugh's homogenizing move. Even though the academic orientation of Girls' High came under fire between 1909 and 1912 and a proposal was made to merge it with its old commercial offshoot William Penn High School, the merger never took place. Both schools shared the central district and Girls' remained strictly academic. How it succeeded while Central failed is not clear.

The remaining years of Thompson's administration were relatively quiet if not happy ones for him. The most damaging blows to both him and his school had already been delivered and what changes he now faced were minor by contrast though nonetheless galling.

In 1915 the Germantown and Frankford annexes were opened as full-fledged high schools independent of Central's control. By this time there were a total of 13 higher schools in the school system including two normal schools (Girls' Normal and Central's Pedagogical), Philadelphia Trades School (vocational) and 10 regional comprehensive high schools.(125) In the same year Central's mechanic arts department moved from the old Central Manual Training School to the old Central High School building across from the new one. Though physically closer now, the program was never really integrated with the high school in any way except administratively. Within the walls of the new building Central continued to concentrate entirely on the academic and commercial courses just as it had before the merger was forced upon it.

Also around 1915 the high school lost a number of time-honored privileges and practices. The school had always published a catalogue listing faculty and courses which in later years had included program descriptions, rules and names of students. This was abolished. Also eliminated were final exams, which in the early years had been public as a way of bolstering confidence in the school and which had always been a major factor in a student's final grade. Annual reports to the board had been written by every president since Bache; but with the high schools increasingly subject to the superintendent's authority, such communications violated the new chain of command and were dropped. Even the practice of referring to members of the faculty as professors was officially abandoned, although it was continued within the school. The only symbol of Central's former status which remained was its power to bestow academic degrees: granted by the legislature, it was one privilege the superintendent could not remove.

However district officials were still unhappy about the degree of recalcitrance and conservatism which they found persisting in the city's high schools, especially Central, and which they had difficulty overcoming. In 1916 Superintendent Garber, announced that he was seeking to establish a more uniform course of study for the high schools through discussions with the principals.(126) In the following year board President Wolf recommended that a supervisor of high schools be appointed who would work to overcome tradition and modernize these institutions (127) and in 1918 he proposed a thorough reorganization of Central.(128) One year later he expressed deep pessimism about whether any of his hopes for the high schools could ever be accomplished: "Our high schools still carry on in the same old way as heretofore, and personally I almost despair of a reorganization along modern lines."(129)

Three events in 1919 marked the close of Thompson's career at Central. The School of Pedagogy was merged with the Girls' Normal School and thus was removed from his jurisdiction. The Philadelphia Trades School was incorporated into Central High School, officially becoming the high school's industrial arts department but retaining its old faculty and building. And the legislature decreed that all teachers must retire by the age of 70. Thompson, who was 75, submitted his resignation and in June of 1920 his long and troubled term ended.

8. HANEY ADMINISTRATION: 1920-1943

The suggestion by Philadelphia's board president and superintendent that the city's high schools were in need of further modernization was strongly supported by the school survey of 1921. Published by the (Progressive) Public Education and Child Labor Association of Pennsylvania, the report of the survey included detailed discussion of high school organization and administration. Among other things it recommended: that the authority of high school committees be reduced and that the authority of the superintendent be expanded beyond curriculum to the general administration of high schools; that the principals of these schools be chosen by the superintendent rather than the committee; that the superintendent develop a generally uniform program of studies for all high schools; and that promotion be made by subject rather by general average.(130)

These recommendations, like those of President Wolf and Superintendent Garber, assumed that high schools were resistant to change and therefore that change must be imposed on them by the school district. And of course the best example of such resistance would have been Central High School under Robert Ellis Thompson. He placed the school in staunch opposition to every effort at

Progressive reform which affected it; and although his opposition consistently failed to fend off the reduction in Central's status within the system, it did help maintain the continuity of the school's internal organization. Under his leadership Central's armies were trounced in the field and its imperial ambitions were lost, but domestically little was changed. The clearest illustration of this point is the way Central Manual Training School and Philadelphia Trades School were merged into the high school. Despite strong resistance Central was compelled to accept these changes, but the extent of its compliance was minimal. Both schools became departments of Central for administrative purposes only while keeping their former faculties and remaining physically separate from the original school organization.

Therefore by 1920 Central High School was defeated but unreconstructed. From the point of view of Progressive reform, what it needed now was not so much more reform by imposition (as was suggested by the survey report) but real reform from within. A thorough reorganization of Central's internal structure required a leader inside who shared the sympathies of Progressives on the outside. When Thompson finally resigned, the board found such a man in John Louis Haney.

Central's eighth president was born in Philadelphia and educated in the city's public schools.(131) In 1891 he entered the high school as part of its one hundredth class and thus was one of the first students to experience President Johnson's new emphasis on college preparation and curriculum differentiation. Four years later he graduated as the first honor man, a distinction which was remarkably common among Central presidents. Interestingly Bache, Hart, Thompson, Haney and Haney's successor, William H. Cornog, all graduated first in their classes -- at West Point for Bache, Princeton for Hart, Penn for Thompson and Central for the other two. In addition Riché was valedictorian of his class at the high school. Altogether these men presided over Central High School for 106 of its first 117 years. One explanation of this trend toward scholastically elite leadership is that it reflects the extent to which the school boards were committed to maintaining a meritocratic tradition at the school. What the boards looked for in a potential president was apparently more than someone who was a good teacher and administrator; they sought a man who had climbed to the very top rung of the student achievement ladder and who thus had a strong investment in the idea that schools can and should reward the competitive pursuit of merit.

Haney entered the University of Pennsylvania as a sophomore and graduated with a B.S. three years later; in 1901 he earned a Ph.D. in English. His first job after college was with Central, where he taught English for 21 years -- winning election as most popular professor by three classes and eventually being awarded the position of department head -- before he was appointed president at the age of 43.

Aside from being an outstanding student, the new president had little in common with his predecessor -- this in spite of the fact that the two spent a considerable portion of their lives in close contact with each other. Haney studied under Thompson during the first year of the latter's term at Central and taught under him for most of the remaining portion of his administration, yet the young man seemed largely impervious to the older man's considerable powers of influence. One way of trying to understand the depth and durability of differences between them is by recalling the changing character of the faculty at Penn and other universities before the turn of the century. Thompson was clearly numbered among those older university professors who saw themselves as amateurs, generalists and moral reformers. Trained in theology, he taught economics and a wide range of other subjects under a mandate that was moral more than scholarly. Like many others of his generation he tended to value preaching over teaching, breadth over thoroughness and rightness over validity.

Haney on the other hand was clearly allied with the opposing and ascendant group of academics who saw themselves as professionals working within specialized scholarly disciplines. The Penn which he entered in 1895 had just been taken over by representatives of this new German-influenced group in a revolt whose most dramatic moment had been the firing of Thompson three years earlier. In keeping with the spirit of the new university, Haney pursued his studies at the graduate level within the narrow confines of the field of English literature and earned the degree that had become the badge of the professional academic, the Ph.D. (Haney was the first Central president to have this degree.) Throughout the rest of his career as teacher and writer he never strayed beyond the bounds of his specialty.(132) He never taught any subject but English, and his numerous publications include such titles as The German Influence on Coleridge and The Story of Our Literature, whose scholarly tone and narrow focus place them at a far remove from a work like Thompson's Divine Order of Human Society.

The movement for academic professionalism was naturally linked to the more general movement for Progressive reform of the schools. The latter promoted professional training and certification for teachers and administrators and also brought about the delegation of administrative responsibilities from political generalists on the board of education to professional specialists in the superintendent's office. To Thompson therefore the professionalizers and Progressives that repeatedly victimized him during his life must have seemed to be men of a similar ilk, men who lacked his moral authority and his sweeping vision and who sought to replace ethics with efficiency and personal leadership with bureaucratic control. Conversely to Haney and other modernizers at both Penn and the school district, Thompson must have seemed, especially late in his term, as a kind of dinosaur that managed somehow to survive into the age of science and that served as a barrier to further progress.

Therefore given the differences that separated these two presidents, the rapid series of changes instituted by Haney in his first few years at the helm can be viewed as an expression of his pent up dissatisfaction over the character of Thompson's regime. His actions speak loudly but he was verbally reticent about openly criticizing his predecessor. It was left to Haney's former student and later successor, historian and loyal supporter -- Cornog -- to take up the cudgels against Thompson in the process of discussing the nature of Haney's reforms.

Of all aspects of Central's internal organization, it was student life that was most deeply influenced by Haney's reforms. According to Cornog Central High School during the Thompson era was for most students an austere and autocratic place. Neither president nor faculty showed a particularly "strong spirit of helpfulness" toward the student who was in academic difficulty. According to a former professor, "There was much of the 'take it or leave it' spirit."(133) This situation was aggravated by two factors. One was that the school continued to pursue a rigorous academic program in spite of the wider variation in student abilities that resulted from quotas and the later abolition of entrance exams. The other was Thompson's hard-nosed promotion policy which compelled students to deal with failures either by repeating the whole year (including courses that were passed) or by moving to the next class but with the extra burden of having to remove conditions hanging over from the previous year. Altogether this system put an extraordinary amount of pressure on Central's students without giving them much in the way of help, hope and encouragement. It is hardly surprising then that about three-quarters of the students who entered the school left before graduation.(134)

The way discipline was handled during Thompson's term was no less forbidding than the procedure for dealing with academic problems. At center stage was a group of professors appointed by the president, known as the discipline committee, which had authority over all serious cases of misconduct. "The Discipline Committee," according to Cornog, "in its very organization, purpose, and methods reflected the quasi-police-state which was the condition of student life in the era of Dr. Thompson."(135)

Ironically the committee may have actually promoted disorder "by making the Faculty authority so imminent as to invite defiance and challenge."(136)

Haney's reforms were characterized by a general softening in the attitude of the administration toward students and an opening of the schools governing processes to student participation. One of Haney's first acts after assuming office was to abolish the discipline committee and to propose the establishment of a student government. In the fall of 1920 the first student council was elected and students were given control of the lunchroom. In the following year a student court began to function and the first student run assembly was held. He strongly encouraged extra-curricular special interest clubs and by the mid 1920s 25 were in operation. In addition he used the funds of the Barnwell Foundation, newly established by the bequest of an alumnus, to bring a series of distinguished lecturers to the school and to publish a variety of student handbooks and informational bulletins. But it was not until 1930 that the last vestige of Thompson's blueprint for student life was removed when the all-or-nothing system of promotion by grade was abolished. Conditional promotion and widespread repeating were gone at last after stamping the character of the student experience at Central for 36 years. Under the new system, promotion was calculated by the course.

The school's curriculum during the Haney years followed the pattern inherited from Thompson. There were four basic courses: the academic course, which Johnson designed and Thompson modified, and the three others that were forced upon the school -- commercial, mechanic arts and industrial arts. Haney made no major changes, but then Central presidents no longer had the power to design their own curriculum; the 1912 board rules vested this authority with the superintendent. If he was unhappy about the arrangement of studies at the school, he did not make his complaint public. In fact the wholly contentious tone of relations between president and superintendent that had characterized the previous administration was missing under Haney. Of course he lacked the variety of forums open to Thompson, including the pulpit, the lectern and the annual report. But given his training and experience, he was more likely than his predecessor to look with favor on a differentiated curriculum promoting a more specialized form of education.

In any case Haney's curriculum was more sharply differentiated than Thompson's. The academic course offered five options all of which were college preparatory: (classical) language, history, science, mathematics and two modern languages. The commercial course had both a college preparatory and a straight commercial program. In mechanic arts there was a single college preparatory course whose focus was on engineering. Unlike the other three the industrial arts course was strictly vocational, offering auto mechanics, machine shop practice and drafting and building construction.(137) In light of this rather confusing array of programs facing students and in line with the best Progressive thinking, Haney established a vocational guidance committee at the school in 1922.

Central High School under President Haney has an extraordinarily modern look to it for an observer from the 1980s, a statement which could never be made about the same school under Thompson. For by the 1920s Central had become a thoroughly ordinary modern comprehensive high school. Like its contemporary counterpart, it had a highly differentiated curriculum; it acquired its students by certificate from a fixed geographical area; it promoted by course and graded by letters; it sponsored a wide range of student activities; and it was subject to the bureaucratic authority of the superintendent's office. The special quality that had always marked Central High School was simply gone.

But toward the end of Haney's administration moves were made to restore Central to something of its former position. In 1935 Superintendent Edward C. Broome presented to the board of education a plan which it approved calling for the return of Central to a strictly academic curriculum, the construction of a new building and the formation of a new school -- to be called Benjamin Franklin High School -- in the old building consisting of the non-academic faculty and students. A site was selected at Olney and Ogontz Avenues and with the help of a $900,000 grant from the Public Works Administration (138) ground was broken two years later. Then in October, 1938 -- exactly 100 years after Central first opened its doors -- the board confirmed the school's transformation by approving selective standards for admission to both Central and Girls' High Schools.

Three months later the new Central High School started functioning in the new building. Just prior to the move the school had been composed of 3,600 students and 123 teachers. Of this number 1,300 students and 41 teachers shifted to Olney Avenue while the remainder stayed behind to become part of Benjamin Franklin High School. Central's 100 year descent through the status hierarchy of the Philadelphia public school system had ended dramatically with the school's restoration to its accustomed position at the top. And what was true in 1939 is true today: Central High School remains the city's only purely academic high school for boys and it continues to draw students selectively from all sections of the city.(139)

9. CONCLUSION

Michael Katz has identified three stages in the organizational development of urban common school systems: democratic localism (control by officials elected at the ward level), incipient bureaucracy and full-scale bureaucracy.(140) This progression was clearly evident in the history of the Philadelphia school system. Democratic localism in pure form lasted from the passage of the revised common school act in 1836 until the courts began appointing the controllers in 1868. Thereafter the ward bosses fought a long losing battle with a rising educational bureaucracy until the final triumph of the latter with the school law of 1911.

This is an accurate description of Philadelphia's school governance as far as it goes, but if one views the developmental process from the vantage point of Central High School -- as I did in this chapter -- then a more complex picture emerges. For although the first stage was indeed characterized by democratic localism at a formal level, there emerged within it an informal control structure which was in fact highly centralized. The high school served as an object of emulation for both students and teachers, and as a result lower school instruction came to be shaped by the outline of the high school entrance exam. Thus the formal localism of the first stage was partially offset by the centralizing influence of this competition for scarce educational resources. But at the same time the formally democratic character of this stage was not threatened by the informal structure of control, because the latter was essentially voluntaristic. Central's power over other schools derived from market incentives rather than administrative directives.

Therefore democratic localism in Philadelphia was not as parochial a system of organization as it was portrayed by the bureaucratizers. It had a centralized structure but not of the bureaucratic type. As a result, in the second stage the incipient bureaucrats had to wage their fight on two fronts: they sought to wrest formal control of the system from political bosses at the ward level and also sought to dismantle the informal structure of centralized control based on emulation. In order to impose a bureaucratic hierarchy over the system they needed to level the pre-existing emulative hierarchy, and this meant systematically eliminating the special powers, privileges and attractions of Central High School. At the same time, to the extent that formal bureaucratic control was lacking, school-system officials needed to preserve a degree of emulative control. Thus during this stage the high school suffered a decline in organizational position that was slow at first and then precipitous, until by 1912 Central had become but one among many comprehensive high schools.

Even this last fully bureaucratic stage of school system development presents a more complex picture, from the perspective of the high school, than one might expect from its name. For in the early 1920s school officials were sill complaining that Central was not under their control. And in 1939 it succeeded in bouncing back from nearly 30 years of bureaucratic subordination to a form of its old special status as a select school for high achievers.

TABLE 1.1

STUDENTS ADMITTED TO CENTRAL HIGH SCHOOL, 1838-1867

(% of total candidates)

	Number admitted	Total candidates	% admitted	Minimum score for admission
1838	63	139	45	
1839	60	139	43	
1840	123	210	59	
1841	105	156	67	
1842	159	219	73	
1843	145	263	55	
1844	194	328	59	
1845	203	311	65	
1846	218	347	63	
1847	207	303	68	
1848	229	343	67	
1849	244	378	64	
1850	180	332	54	46
1851	223	291	77	46
1852	223	311	71	50
1853	229	326	70	54
1854	258	324	80	60
1855	273	342	80	56
1856	286	330	87	57
1857	229	306	75	60
1858	228	310	74	66
1859	270	318	85	69
1860	291	331	88	68
1861	300	NA	NA	NA
1862	273	NA	NA	NA
1863	301	318	95	64
1864	291	NA	NA	NA
1865	263	297	86	62
1866	331	396	84	65
1867	272	328	83	62

Source: Board of Controllers, Annual Reports, 1838-1867.

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TABLE 1.2

STUDENT ENROLLMENTS IN CENTRAL HIGH SCHOOL AND PHILADELPHIA PUBLIC SCHOOLS, 1840-1925

	Central HS enrollment	Total Phila. public school enrollment	Central as % of total
1840	199	21,968	0.9
1845	408	36,665	1.1
1850	485	45,383	1.1
1855	601	54,813	1.1
1860	540	61,745	0.9
1865	426	72,099	0.6
1870	489	80,891	0.6
1875	611	95,552	0.6
1880	495	105,422	0.5
1885	619	107,242	0.6
1890	561	114,306	0.5
1895	773	132,052	0.6
1900	1,235	151,455	0.8
1905	1,729	170,582	1.0
1910	2,301	175,479	1.3
1915	2,560	203,175	1.3
1920	2,802	215,862	1.3
1925	3,650	267,871	1.4

Source: Board of Public Education (Controllers), Annual Reports, 1840-1940.

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FOOTNOTES

AR = *Annual Reports* of the Philadelphia Board of Public Education (Controllers)

1. Michael B. Katz, *Class, Bureaucracy and Schools: The Illusion of Educational Change in America*, expanded ed. (New York: Praeger, 1975), pp. 56-104, especially pp. 60 and 102.

2. Ellwood P. Cubberly, *Public Education the United States*, rev. ed. (Boston: Houghton-Mifflin, 1934), p. 217.

3. Franklin Spencer Edmonds, *History of the Central High School of Philadelphia* (Philadelphia: Lippincott, 1902), p. 33; and AR 1842, p. 42.

4. James Mulhern, *A History of Secondary Education in Pennsylvania* (Lancaster: by the author, 1933), p. 493.

5. Selwyn K. Troen, *The Public and the Schools: Shaping the St. Louis System, 1838-1920* (Columbia, Mo.: University of Missouri Press, 1975), p. 17.

6. David B. Tyack, ed., *Turning Points in American Educational History* (Waltham, Mass.: Blaisdell, 1967), p. 355.

7. Similar charges were made against the high school in other cities as well. David B. Tyack, *The One Best System: A History of American Urban Education* (Cambridge: Harvard University Press, 1974), pp. 57-8.

8. Newspaper clipping from archives of Associated Alumni of Central High School in scrapbook labeled 1841-1842. Newspaper name not shown.

9. *The North American and Daily Advertiser* (Philadelphia), May 9, 1842.

10. AR 1850, p. 103.

11. AR 1836, p. 8-9.

12. AR 1842, pp. 50-1.

13. John Trevor Custis, *The Public Schools of Philadelphia* (Philadelphia: Board of Public Education,

1897), pp. 16-21.

14. AR 1850 p. 85.

15. Thomas Dunlap, "Introductory Address at the Commencement of the Central High School, February 12, 1851" (Philadelphia: Board of Controllers, 1851).

16. I am not arguing here that Central was unique in its role as an agent of centralization. That role has been attributed to the high school in general during the nineteenth century: see Katz, Class, Bureaucracy and Schools, p. 34; Alexander J. Inglis, The Rise of the High School in Massachusetts (New York: Teachers' College Press, 1911), p. 35; and Tyack, The One Best System, p. 57.

17. Alexander Dallas Bache, Report to the Controllers of the Public Schools on the Reorganization of the Central High School of Philadelphia, December 10, 1939 (Philadelphia: Board of Controllers, 1839), p. 16.

18. Merle M. Odgers, Alexander Dallas Bache: Scientist and Educator, 1806-1867 (Philadelphia: University of Pennsylvania Press, 1947), pp. 96-7.

19. AR 1840, p. 24.

20. Ibid.

21. AR 1841, p. 24.

22. AR 1842, pp. 25-9, 41-5.

23. Ibid., pp. 11, 27.

24. George V. Fagan, "Alexander Dallas Bache, Educator," Barnwell Bulletin 18:75 (April, 1941), p. 30.

25. Edmonds, History of Central High School, pp. 98-102.

26. Ibid., pp. 319, 328.

27. Odgers, Bache, pp. 93-4.

28. Edmonds, History of Central High School, p. 102.

29. George H. Cliff, "The Central High School of Philadelphia: An Historical Sketch," in The Semi-Centennial Celebration of the Central High School of Philadelphia (Philadelphia: Semi-Centennial Committee,

1888), p. 23.

30. Edmonds, History of Central High School, p. 34.

31. AR 1853, pp. 116-126.

32. AR 1850, pp. 84-106.

33. Ibid., p. 85.

34. Ibid., p. 40.

35. AR 1848, p. 95.

36. Robert Wayne Clark, "The Genesis of the Philadelphia High School for Girls," (Ed.D. dissertation, Temple University, 1938), p. 31.

37. Edmonds, History of Central High School, p. 184.

38. AR 1850, pp. 107-9.

39. Mulhern, Secondary Education in Pennsylvania, pp. 497-8.

40. Board of Directors of the Sixth Section, Report of a Committee of the Board of Directors of the Public Schools of the Sixth Section (Manayunk: by the board, 1849), p. 8.

41. Mulhern, History of Secondary Education, pp. 497-8.

42. AR 1849, p. 84.

43. Ibid.

44. Ibid., p. 86.

45. Edmonds, History of Central High School, p. 149.

46. Ibid., p. 144.

47. Ibid., p. 155.

48. AR 1850-1858.

49. AR 1859, p. 134.

50. Ibid., p. 123.

51. Edmonds, *History of Central High School*, p. 184.

52. Superintendent of Schools, *Annual Report for 1904* (Philadelphia: by the board of education, 1905), p. 46.

53. *Ibid*., p. 63.

54. Edmonds, *History of Central High School*, p. 184.

55. AR 1866, pp. 325-6.

56. Superintendent, *Annual Report for 1904*, p. 56.

57. Board of Controllers of the Public Schools of Philadelphia, *Report of the Committee on the Central High School Adopted by the Board of Controllers of the Public Schools of Philadelphia, January 2, 1862* (Philadelphia: by the board, 1862), p. 64.

58. *Ibid*., p. 4.

59. Clark, "Genesis of the Philadelphia High School for Girls," p. 56.

60. Edmonds, *History of Central High School*, pp. 195-7, 341.

61. Cliff, "History of Central High School," p. 28.

62. Franklin S. Edmonds, ed., *Proceedings of the Dedication of the New Buildings of the Central High School of Philadelphia, November 22-26, 1902* (Philadelphia: Lippincott, 1910), p. 199.

63. Cliff, "History of Central High School," p. 29.

64. Charles R. Nash, "The History of the Legislative And Administrative Changes Affecting Philadelphia Public Schools", 1869-1921 (Ph.D. dissertation, Temple University, 1946), p. 18.

65. AR 1869, pp. 46-59.

66. AR 1868, p. 209.

67. Superintendent, *Annual Report for 1904*, p. 45.

68. AR 1869, p. 208.

69. *Ibid*., pp. 208-9.

70. Custis, Public Schools of Philadelphia, p. 41.

71. AR 1877, p. 30.

72. *Ibid.*, p. 327.

73. AR 1878, p. 23.

74. *Ibid.*, p. 21.

75. *Ibid.*, p. 22.

76. AR 1883, p. 45.

77. Nash, "Changes Affecting Philadelphia Public Schools," p. 135.

78. AR 1884, p. 356.

79. Edmonds, *Dedication*, p. 205.

80. E. Digby Baltzell, *Puritan Boston and Quaker Philadelphia: Two Protestant Ethics and the Spirit of Class Authority and Leadership* (New York: Free Press, 1979), pp. 292-4.

81. Edmonds, *History of Central High School*, p. 345.

82. *Ibid.*, p. 330.

83. *Ibid.*, p. 332; Edmonds, *Dedication*, p. 119; and William H. Cornog, *School of the Republic, 1893-1943* (Philadelphia: Associated Alumni of Central High School, 1952), p. 39.

84. Mulhern, *History of Secondary Education*, p. 480.

85. Clark, "Genesis of Philadelphia High School for Girls," pp. 78-9.

86. AR 1887, pp. 359-364.

87. Edmonds, *Dedication*, p. 123.

88. Cornog, *School of the Republic*, pp. 50-1.

89. This biography is drawn primarily from "Robert Ellis Thompson, A Memoir," by Richard Montgomery, *Barnwell Bulletin* 12:48 (October, 1934).

90. Philadelphia: John D. Wattles, 1891.

91. Cornog, School of the Republic, pp. 57-8.

92. Edward Potts Cheyney, History of the University of Pennsylvania, 1740-1940 (Philadelphia: University of Pennsylvania Press, 1940), pp. 288-94. For an excellent discussion of academic professionalism in general, see Mary O. Furner, Advocacy and Objectivity: A Crisis in the Professionalization of American Social Science, 1865-1905 (Lexington, Ky.: University of Kentucky Press, 1975).

93. Henry Johnson wasn't so fortunate. A sharp-eyed journalist noticed that his inaugural address was plagiarized from a speech by President Garfield. Cornog, School of the Republic, pp. 41-2.

94. Ibid., p. 49.

95. Ibid., p. 133.

96. Tyack, The One Best System.

97. Cornog, School of the Republic, pp. 57-81.

98. Ibid., p. 58.

99. Nash, "Changes Affecting Philadelphia Public Schools", p. 131.

100. Cornog, School of the Republic, p. 230.

101. Ibid., pp. 226-33.

102. Ibid., p. 231.

103. Nash, "Changes Affecting Philadelphia Public Schools", pp. 53, 61, 74.

104. Tyack, The One Best System, pp. 102-4.

105. AR 1896, pp. 331-2.

106. Superintendent, Annual Report for 1898-9, pp. 8-9.

107. Cornog, School of the Republic, p. 170.

108. AR 1898, p. 13.

109. Cornog, School of the Republic, pp. 169-71.

110. Superintendent, Annual Report for 1900-1, p. 46.

111. John Louis Haney, "The Four Homes of the Central High School of Philadelphia," Barnwell Bulletin 16:63 (September, 1938).

112. Edmonds, Dedication.

113. Cornog, School of the Republic, p. 188.

114. Public Education Association, Arguments Against the Extension of the Course and the Change of the Name of the Central High School (Philadelphia: Public Education Association, 1898), pp. 22-4.

115. Cornog, School of the Republic, p. 199.

116. Board presidents Huey and Edmunds did support the college concept, but then both were Central alumni. Superintendent Brooks also supported it, but he had a reputation more as an efficient administrator than as a control-conscious Progressive.

117. Cornog, School of the Republic, pp.226-33.

118. Nash, "Changes Affecting Philadelphia Public Schools", p. 134.

119. Clark, "Genesis of the Philadelphia High School for Girls," p. 121.

120. Ibid., 114.

121. Ibid., 133.

122. Nash,"Changes Affecting Philadelphia Public Schools,"p. 132.

123. AR 1912, p. 9

124. Ibid., pp. 172, 174.

125. Superintendent, Annual Report for 1915, p. 33.

126. Superintendent, Annual Report for 1916, p. 32.

127. Superintendent, Annual Report for 1917, pp. 10-11.

128. AR 1918, p. 12.

129. AR 1919, p. 12.

130. Pennsylvania Department of Public Instruction, Report of the Survey of the Public Schools of Philadelphia, 4 vols.(Philadelphia: Public Education and Child Labor Association, 1922), vol. 2, pp. 118-21.

131. Cornog, School of the Republic, pp. 234-240.

132. Except of course in his writings about Central, which became in effect his second specialty earned by longevity and position.

133. Cornog, School of the Republic, pp. 133.

134. Ibid., pp. 131-3

135. Ibid., p. 241.

136. Ibid., pp. 242.

137. Ibid., pp. 258-64.

138. Central's first building was also built with the aid of federal money.

139. Cornog, School of the Republic, pp. 300-16.

140. Katz, Class, Bureaucracy and Schools, pp. 3-55.

CHAPTER II

INTERNAL ORGANIZATION: GOVERNANCE AND PROFESSORS

The first chapter gave an account of the evolving relationship between Central High School and the Philadelphia public school system. For the purposes of that discussion, the school was portrayed as a single actor personified by its president and engaged in interaction within a larger structure of organizations. In this chapter I want to focus attention on the school not as an actor but as an organization, examining the pattern of interaction within the school over its first 100 years of existence. The discussion will focus on two aspects of internal organization -- first, the way the school was governed, including the relationship between the two governing agents, president and faculty; and second, the changing social characteristics of Central's professors and the changing status characteristics of its professorships.

1. GOVERNANCE

The history of internal governance at Central High School closely parallels the history of the high school's relations with the school system. In its early years Central played an active and frequently dominant role in the workings of the school system only later to find itself gradually made subject to the system's bureaucratic controls. In similar fashion Central's faculty, acting as a parliamentary body, dominated the school's internal governance during most of the nineteenth century, but by the turn of the century the school was increasingly governed by a structure of functionally differentiated administrative units. Thus Central's period of great institutional influence within the system was also the period of great faculty influence within the school. And at a later time when the school was becoming incorporated into a district-wide bureaucracy, its faculty was becoming incorporated into a system of specialized administrative roles.

The most detailed and useful information on Central's internal governance comes from a single source -- the minutes of its faculty meetings. Fortunately the school's archives have retained the complete set of these minutes from 1840 to the present. In the absence of these handwritten ledger books examination of governance would be impossible, since the other existing sources are either sporadic in coverage or oblique to the subject. However the minutes do present several major difficulties of interpretation. One is that they show only the formal side of the school's internal organization and give little direct insight into informal power relations. A second problem is that as the record of faculty actions, they tend to exaggerate the extent of the faculty's influence relative to that of president and school board.

The first problem is of course by no means unique to this study or this subject. Historical analysis is characteristically dependent on the written record and thus can always speak more authoritatively about formal actions in the past than about informal actions. In the next chapter this difficulty again presents itself: information exists about the theory and general practice of Central's pedagogy, but virtually no information has survived about the nature of informal classroom interaction. The only way to overcome this problem, if only in part, is to use a variety of other sources as a lever for prying loose clues to the school's informal organization from a formal record. For example, knowledge of the educational and career histories of individual professors can aid in the interpretation of roll call votes and lead to inferences about the causes of factionalism on the faculty. A particularly useful source for providing such insight into informal governance is a pair of hearing transcripts from the early 1860s in which is recorded the detailed testimony of faculty, president and students about the day-to-day workings of the school.

As for the other problem, it is clear that faculty minutes do give the natural impression of collegial control in much the same way that the Congressional Record represents congress as the dominant branch of the federal government. However it is quite possible to work around this bias. One way of doing so is to examine changes within the minutes over time. For example the observation that faculty meetings in the twentieth century were less frequent and more perfunctory can support the conclusion that collegiality was declining. Another way around the problem is to counter it with an equal and opposite bias, the annual reports of the president. The first chapter was largely based on the latter documents, which by their nature tend to portray the president as the originator of school policy and the embodiment of school organization. The reports are the president's forum in much the same way that the minutes are the faculty's. But known biases like these can be usefully employed in an analysis as counterpoints to each other, each contributing to the fuller understanding of the school's governance while acting as a check against the likelihood of drawing unwarranted inferences from the other source.

Keeping in mind these caveats, let us now turn to a chronological account of the way Central governed itself.

The Rise and Fall of Collegiality

When Central High School first opened its doors in October, 1838, it had four professors, no principal and no formal rules of internal governance. For the next year and a half the professors ran the school, informally and on their own (they kept no minutes). As part of the larger tale of declining collegial control, this period appears as a brief idyll before the fall. For the high school committee was unhappy with the direction the school was taking and commissioned Bache to reorganize it and become its principal. Suddenly in January of 1840 the faculty found itself with a head and a set of written rules. Making the shock even greater, the new head was not a principal teacher but what in the 1880s became known as a "supervising principal", an administrator who does no teaching. The new rules, which Bache had devised and the committee had approved, forced the faculty to share its governing power with him. Since these rules defined the pattern of relations between principal and professors for the next 50 years, it is worth examining them in some detail:

> The principal, and professors, or masters, shall meet, from time to time, as a Board, to

> inform themselves of the progress and character of the pupils in the several rooms, to consult in regard to improvements in their courses or discipline, and to consider such cases of discipline as may be submitted to them.
>
> The principal of the school shall have authority to convene this Board, and to serve as a medium of communication with the Committee of Control.
>
> Each Professor is considered as responsible for the good discipline and due progress of the pupils in his department, subject to the rules of the Committee of Control.
>
> The principal is charged with the inspection of the school, and it is his duty to make to the professors, or masters, or to the Committee, such suggestions in regard to the studies, discipline, and general welfare of the establishment, as may seem to him to be necessary or expedient. The principal shall make a report to the committee twice every year, at the close of each term, relative to the condition of the High-school, and embodying such suggestions for its improvement, as may appear advisable. The principal is considered as replacing the committee in regard to the internal management of the school, when they are not in session.
>
> The Committee of Control have full authority to make all rules and regulations relating to the High-school, not conflicting with the foregoing, and to alter them at pleasure.(1)

These rules were aimed at achieving a kind of balance between principal and professors. Paragraph one gives professors control over the day-to-day academic and disciplinary activities of students while paragraph three recognizes their autonomy in the classroom. Even paragraph four, which grants the principal the power to inspect the school, only allows him to make "suggestions" to professors. However the principal's position as a counterpoise to the faculty is emphasized by the fact that his powers are defined quite clearly as descending from the high school committee and not arising from the faculty. He is the one who acts as medium of communication between the school and the committee and he is the one who "is considered as replacing the committee in regard to the internal management of the school, when they are not in session" -- which of course was most of the time.

The reorganization plan therefore establishes a form of government for the school that combines two very different forms of authority: the authority of professors over student activities deriving from their traditional control of the classroom and the authority of the principal over the school in general derived from the committee's legal mandate. This duality is not surprising when one considers that Bache was in fact brought in by the committee to impose a new order on the old faculty. But the principal was by no means structurally fixed by this plan as the committee's agent within the school. It does not take a great leap of imagination to picture a situation in which the process of differential association (he deals with the faculty daily, the committee biweekly) could lead a principal to assume the role of leader and spokesman of the professors, serving as a medium for communication for their concerns to the committee. As we have already seen in chapter one, this was precisely the role adopted by principals in their annual reports. The importance of Bache's rules then for our understanding governance is that they portray the principal as being presented with a choice. He could be the agent of the faculty (as he appears in the annual reports) or the agent of the committee (as he appears in the rules); and even if he chose the former, he always retained the capability of activating his delegated powers. In either case his choice would have a profound effect on his relations with these two reference groups.

The minutes begin with the "First Meeting of the Board of Professors of the Central High School, January 11th 1840" at which time the board approved Bache's reorganization plan and voted to convene every Saturday at noon. On the exact nature of these early meetings the minutes are largely silent. The typical entry during Bache's tenure lists those present, names the disciplinary "officer of the week" and blandly states, "Examined the rolls and certificates of absentees for the previous week." The implication is that the faculty was a regular participant in at least the routine administration of the school.

But participation need not imply harmony. As mentioned in chapter one, Bache's practical curriculum aroused the ire of a group of classicists on the faculty led by John Frost, professor of "English Belles Lettres", who "were to wage war against Bache and were finally instrumental in his leaving Central High School in 1842."(2) This struggle may have been over organization as much as curriculum. Frost seems to have been accorded senior status among the professors, since his name is always listed ahead of the other in the minutes and since he tended to chair board meetings in the absence of the principal. He may well have been the informal leader of the faculty in the days before a formal structure and a principal were imposed on the school. As such he would have been a natural leader of the opposition to Bache's plan for restricting the previously unlimited degree of collegial control of the school. Frost was fired by the high school committee in 1845 (3); and although the reason is nowhere mentioned, it quite possibly revolved around a dispute over governance. It appears more than coincidental that three of the five professors who governed the high school before Bache's arrival were at some point in their careers involuntarily removed from their positions by the committee. Learning to share power was not easy.

During the first half of Hart's administration the board of professors continued to regulate the school's routines. For the most part this meant that they examined the rolls, but they also adopted policies for grading and promotion, dealt with extraordinary discipline problems, responded to attacks from grammar school masters and commented on questions and actions by the board. This image of collegiality is enhanced by the fact that Hart, unlike Bache, assumed part of the teaching load and referred to himself as professor of moral, mental and political science as well as principal. But two bits of evidence show that faculty control was far from complete under Bache's successor. For one, by the mid 1840s the number of board meetings was reduced to about two a month. For another, there is a fascinating document written into the minutes which reveals a side of principal-professor relations that is more hierarchical than collegial. It is a set of instructions "To the Professor in charge of the North Wing" of the school during the admissions exam. It reads in part:

> Dear Sir
>
> You are requested to see that none of the pupils loiter in the hat rooms of the 2nd or 3rd stories, nor in my room or Prof. Kendall's -- to see that the pupils whose examination is finished retire in good order and without noise.... At the expiration of the hour you will be relieved by some other Professor to whom you will please to give this paper of instructions and the written lists of classes. In case you are not relieved, please to notify me by messenger but do not leave the room vacant.(4)

Change a few words and this could be an administrative directive issued to the teachers of a contemporary high school. The potential for bureaucratic governance seems to have existed in the first decade of the school's existence, and its source or carrier was apparently the principal.

In 1851, two years after the state authorized Central to begin issuing college degrees, the board of professors voted to organize itself as a faculty.(5) This reorganization amounted to more than a simple change of name (the minutes from this point on refer to the "faculty" instead of the "board") but less than a total overhaul of the structure of governance. Bache's arrangement of the relative powers of professors, principal and committee were essentially unchanged. The new rules were directed exclusively toward the conduct of faculty meetings and exhibited a sudden great concern with the details of parliamentary procedure. The minutes reflect the changes. From 1851 to 1888 the faculty met every week that school was in session. The meetings during this period are filled with flurries of parliamentary activity: a great variety of motions and resolutions, friendly and hostile amendments, rulings by the chair, appeals, roll-call votes and motions to reconsider.

These changes are understandable if considered in conjunction with the event that triggered them, the authorization to confer college degrees. Being treated as a college by the state spurred the professors to organize themselves like one as well. And especially since the school's collegiate status was marginal -- it was still called Central High School -- the professors may have felt a need to act more self-consciously collegial than a real college faculty. An important effect of this change was that it both highlighted and formalized the character of the faculty's involvement in running the school. If nothing else the stress on parliamentary procedure reflected the faculty's heightened sense of self importance and its willingness to structure itself.

Another important consequence of this change is that the faculty for the first time conferred on the principal the title of president. This move can of course be explained as part of the faculty's pursuit of collegiate status: a college, after all, is headed by a president not a principal. More interesting is the question of what if anything this change implied for the president's governing powers. A nuance of the wording in the 1851 rules is suggestive in this regard. Rule five states: "The Principal of the High School is ex-officio President of the Faculty."(6) Note the distinction: he is named president of the faculty but he remains principal of the school. The rules seem to be segregating his parliamentary from his administrative role; they define his duties as presiding officer of the faculty during its weekly meeting but are silent on his administrative responsibilities over the school outside the meeting. What this rule does then is formalize the two elements of the principal's role as discussed earlier -- where the president is the agent of the faculty, incorporated into it and made its leader, and the principal is the agent of the committee, distant from the faculty and with power over it. For the next 20 years Central's head was designated in the minutes either president or principal depending on whether the faculty or the school was the point of reference. It was not until the early 1870s that annual reports, commencement programs and the minutes began to refer to him consistently as the president of Central High School, a practice continued to this day. Although Central presidents since then have gradually accumulated administrative power, it is worth recalling that the title arose originally to identify the collegial component of their role.

The evidence about Central's governance thus far has either been highly formal -- written rules -- or rather tentative. But now I want to turn to the two hearings that took place during the Maguire administration, the only existing source of hard testimony about the organization of the school under Hart and Maguire. In 1861 the high school committee was investigating charges of "inefficiency" at Central and asked Maguire for comment. The latter charged three senior professors with general incompetence and negligence -- Henry McMurtrie, William Vogdes and Georges Gerard. After interviewing the entire faculty, the committee asked for the resignations of all three. McMurtrie acceded, but the other two issued countercharges against Maguire and the latter demanded a public hearing. A special committee heard 120 pages of testimony in the first three months of 1862 and eventually voted three to two against Maguire. But the board of controllers voted to uphold the principal and confirm the three firings. However in 1866 another inquiry into Maguire's handling of the school was held and the 250 pages of testimony accumulated this time convinced the board to declare the entire faculty vacant and then rehire everyone except four professors and Maguire.

A number of important issues involving school organization were raised during these hearings, but by far the most prominent was that Maguire violated collegiality in the way he instituted a new discipline system.(7) From the very start Maguire had wanted to abandon Hart's system of discipline, under which misconduct demerits were deducted from average scholarship, in favor of a system which separated the two forms of evaluation. A majority of the faculty strongly opposed the change, so instead of presenting it to the faculty for vote he turned to the high school committee and won unanimous approval for installing the new plan.(8) This seems to be a clear case of the school's head abandoning the role of president of the faculty, in the absence of collegial support, and opting instead to act under the committee's authority as principal.

The Hart-era professors reminisced fondly on the stand about the extensively collegial quality of governance under the previous administration. But in doing so they revealed the critical element which made collegial decision-making possible -- the existence of a wide-ranging concensus among president and professors about how the school should be run. However Maguire and the younger members of the faculty (a minority) found themselves in sharp opposition to the rest over crucial issues like discipline and pedagogy. His choice was either to preside over the maintenance of the status quo or to draw on his latent powers as principal. The fact that he chose the latter course and that the committee unanimously supported him suggests that this may have been his mandate from the start. From the committee's point of view, the only realistic way to sponsor innovation or reform in a collegial institution was by inserting an outsider and investing him with extra-collegial powers. It worked with Bache. The question is, why didn't it work with Maguire?(9) The answer will be deferred until more issues are explored.

Another governance issue raised during the hearings was the charge that the principal's new mode of discipline was not only improperly arrived at but was organizationally unsound. One after another the older professors asserted that the new system was dangerously soft on students and that it undermined each professor's authority over his class. In support of this charge, they pointed out how

Maguire had not only lessened the effects of demerits on the students but had pushed for and won a limitation on the number of demerits a professor could award a student in an hour. These claims were gradually enlarged until Maguire was finally accused of committing the ultimate crime against proper school governance -- choosing collusion with students over colleagueship with the faculty. He was known to withdraw students from classes where he felt they were being victimized by professors and to raise grades which he felt were lowered punitively. According to testimony the situation was quite different during the Hart administration when a professor's authority over his class was absolute -- backed up both by an unyielding system of discipline and a colleague-oriented president.(10)

A third issue that arose from the hearings was that Maguire was caught in the midst of a power struggle within the school. In part this has already been explained as the uprising of a collegial body against an outsider attempting to rule by fiat. But some individuals should be singled out. For example, two of the professors who were fired at Maguire's recommendation -- Vogdes and McMurtrie -- were members of the five man pre-Bache faculty which helped provoke both Bache's arrival and his departure. It is worth recalling that only two professors from this fractious group resigned from the high school voluntarily. Apparently McMurtrie's problem was more old age than obstreperousness, but the power issue was augmented in Vogdes' case by the fact that as senior professor he served as acting principal during the interim between Hart and Maguire. And in addition to the acting principal, Maguire also had to contend with two professors who had been his direct competitors for the job, Rhoads and McClune.

There is a status reason for why Maguire was such a provocation to these men and also why he was such an easy target. Like Rhoads, McClune and a number of other Central professors, Maguire had been a grammar school principal before coming to the high school. Already by the 1850s there was an established career ladder leading from a successful tenure as a grammar school master to a professorship at the high school. But Maguire had skipped this step and jumped directly to the principal's post, the only person to have done so before or since. In the view of much of the faculty, therefore, the new principal was more than a successful competitor -- he was a social climber, a man who had over-reached himself and who was thus of necessity viewed as one who was incapable of carrying out the task.(11)

The fourth issue to emerge from the testimony revolved around disagreement over the nature of the principal's role. The older professors uniformly berated Maguire during both hearings for failing to teach as Hart had. For members of a collegial body this charge amounted to the accusation that he had failed to make himself a part of them. Maguire's rejoinder was that he saw himself in the role of a supervising principal devoting full time to the administration of the school -- like Bache. But his opponents jumped on this too, charging that he failed to supervise either. Why didn't he visit classes and make suggestions about the form of instruction? Their testimony indicates that Hart did these things (though to what extent there was some disagreement) and thus adopted elements of a supervisory role in addition to his collegial one. Maguire's response was that each professor was an expert in a field that no one else was qualified to judge. His answers to both questions are plausible, but put together they define him as a man without a role at the high school. Or as any number of witnesses mused, if Mr. Maguire doesn't teach and doesn't supervise, what does he do? This can easily be rephrased in the terms used here to describe the governance of the high school: if he was not a colleague and not an administrator, what role did he play? His failure to answer this question adequately explains as well as anything why Maguire lost his job.(12)

There is a final set of issues that is quite revealing about the nature of principal-professor relations. From the opening of the first hearing Maguire was badgered about his frequent failure to read the Bible during the morning assembly. A number of witnesses attributed this to his lack of an impressive public manner and his poor speaking voice, but the intense interest in the issue implies some darker charge -- perhaps impiety. In addition to this there emerged in the middle of the second hearing the shocking accusation that Maguire was a drunk. The issue immediately became a litmus test for all witnesses: all of his opponents declared that he was frequently noticed at school with liquor on his breath and that his absences from school were due to binges, while all his supporters had never noticed anything of the kind. Such charges are naturally suspect in character but they are particularly so in this case since Maguire was an Irish Catholic. In a city that was just emerging from the Know-Nothing era and in a situation where he was already under substantive attack, to have him accused of both drunkenness and irreligion seems entirely too pat to be anything but an ethnic and religious slur. But as I have already noted, Maguire was from the very start an easy target.(13)

What was the outcome of all this turmoil for the character of governance at Central High School? On one level it is clear that Hart-era professors, representing collegiality and the status quo, won out handily over Maguire, representing vertical authority and innovation. Even though they lost three of their number in 1861 and another in 1866, in the latter year they rid themselves of Maguire and three of his young supporters on the faculty.

One would be tempted to call the outcome a runaway victory for the collegial forces if it weren't for the fact that they suffered a trouncing on the substantive issues. Maguire's two most important and bitterly opposed innovations -- soft discipline and the supervising principalship -- were confirmed by the succeeding administration and became a permanent part of Central's internal organization. Although he had lost his post in the most unpleasant possible way, Maguire had won his point: in the future professors would have to learn how to control their classes without resorting to their former penal authority and they would have to adjust to a principal who was a specialist in administration.

On another level it was the board of controllers that was ultimately triumphant because it demonstrated to both faculty and principal that it had the power to replace them all and the will to use this power. But within the school the result seems to have been that both faculty and principal emerged stronger from these events. The professors were battle-hardened in defense of their collegiality and the principal achieved new credibility for his administrative authority.

It is only appropriate that Maguire's successor should have been the first Central head to be known as the president of the school rather than merely president of the faculty. As a lawyer and politician who had never taught a day in his life and as a recent alumnus, he could hardly have been at the outset considered a colleague by the professors; and as a former member of the high school committee and the city council with close ties to the committee's long-term chairman, his administrative authority was unquestioned.(14)

What is fascinating about Riché, however, is that in spite of his initial professional distance from the faculty and his enhanced powers over this body, he deliberately chose to work through the professors rather than over their heads like Maguire. Perhaps this was out of respect for the power of the faculty in the wake of its recent regicide, or perhaps it was the result of a politician's reflex for conciliation. It also may have been rooted in a genuine sympathy for the faculty's position: as a member of the controllers in 1862 he had voted with the minority to reinstate the professors fired at Maguire's request.(15) Whatever the reason, his administration had a strikingly collegial character. In the words of a school historian who was both a student and a professor under Riché,

> It is an evidence of the mental adroitness of this youthful President, and of his exceptional fitness for the position, that in a remarkably brief space of time he succeeded in winning the love and confidence of the Faculty....(16)

But while his "mental adroitness" restored harmonious relations between president and professors, it led him to forego the kind of innovations in the school's organization achieved by his predecessor.

> The changes made by President Riché were not immediately of a radical character, nor did he seek to introduce any practices widely divergent from those already in use. His course of study was a slow growth. Believing that, after all, the efficiency of a school rested with the teachers, and with the teachers only, changes were made in the methods of instruction rather that in the studies themselves.(17)

The changes he sought were submitted to the parliamentary procedure of the faculty meeting; and although he rarely lost a roll-call vote, he would sometimes abandon a proposal if it seemed to lack sufficient support.(18) His aim in short was to preside over the faculty not dictate to it.

However his knack for promoting collegial cooperation was not to last forever. At the time when he resigned in 1886, it was noted that "in the Faculty the harmony that had characterized the earlier period had been sadly marred."(19) The nature of this disharmony was revealed one year later in a showdown fight between two factions over proposed changes in the curriculum. The majority report from a faculty committee called for a dramatic increase in language instruction, especially the classics, in order to prepare student to meet college entrance requirements. The minority report argued in favor of the position held by all the previous presidents, especially Riché -- that the high school should teach a broad and practical course designed to prepare students for work rather than college.(20) When the question was finally called, after weeks of maneuvering and debate, the majority report was approved by a vote of eight to six.(21)

The two professors with the longest tenure, both hired by Hart, voted with the minority but so did two who were hired since 1880, so this was not a division of old vs. new professors of the sort that afflicted Maguire. The sides seemed to be determined instead by the kind of education the professor received. Five of the six minority professors had attended Central as students compared to four of eight in the majority. In addition only two of the opponents of the college preparatory course had been to college themselves compared to five of its supporters. The two factions then seem to have consisted of, on the one hand, a group of alumni professors seeking to defend Central's traditional practical curriculum and to preserve the notion that a high school education is quite sufficient and, on the other hand, a group of professors with a higher level of education who were less invested in the school's traditions and who saw the necessity of preparing their students for further study. The majority got its way. The high school committee picked a Latin professor, Henry Johnson, as the next president and after a short time in office he produced a college preparatory curriculum in line with the provisions of the faculty report.

What is striking about this incident is that it seems to contain a number of the elements of the Maguire controversy but with the actors reversed. In the earlier situation Maguire, with the support of the high school committee and a minority of the faculty, imposed a set of educational innovations on a traditionalist majority. But in 1887 the initiative for radical change came from the majority of the faculty and not the president. Riché had in fact been a strong supporter of the practical curriculum, and it is perhaps a tribute to his ability to guide the parliamentary process that this issue did not come to a vote until a year after he left. Indeed the vote occurred during a two-year interregnum when Central had no permanent president but was being temporarily administered by the senior professor, Zephaniah Hopper. In the absence of presidential authority, it was a time, not unlike the pre-Bache high school, of untrammeled collegial governance. Johnson discovered what Bache had learned, that this is not an easy situation for a new president to walk into.

The committee had first offered the presidency to the head of the Lawrenceville School, who refused because of the faculty's reputation for disharmony.(22) And the arrival of President Johnson did nothing to dampen the independence and contentiousness of the professors. Four months later the issue was raised at a meeting of the high school committee by member Thomas E. Merchant:

> The High School to-day is no better than it was a year ago... The most deplorable state of things exists. There are seventeen heads to the school and no one is recognized as the principal. They are all trying to run the school to suit themselves and what one does the others undo and no one will recognize a superior.
>
> Why if I were to tell you gentlemen what I know from personal observation has taken place in that school you would be surprised and astounded. There is constant and continual interference on the part of the professors with each other's departments. Instead of attending to their own, they pay more attention to what goes on elsewhere, and know practically nothing of what goes on in their own departments, and there is a constant clash, each man pulling against the other.
>
> Against the outside world they will stand firmly together and each would come forward and testify that every man does his duty and that the utmost harmony prevails.(23)

True to Merchant's prediction, when professors were reached by a reporter the next day they were uniform in denying the charges.(24)

There is a powerful piece of evidence which helps support the conclusion that the professors were in fact struggling with the president and each other -- the simple and sudden move by which Johnson ended regular faculty meetings. From 1851 to 1888 the faculty had met every week school was in session in order to govern the school. Its last "stated meeting", November 8, 1888, was the first that Johnson attended after his inauguration.(25) From that day on meetings were held only when called by the president and then but rarely. All told Johnson held merely 24 faculty meetings in just over five years -- fewer than five a year. Actually, since seven of these were ceremonial gatherings at commencement, there was total of only 17 full-fledged meetings or about three and one-half a year.

Of course a faculty cannot govern a school collegially when the "college" of professors meets on an arbitrary and occasional basis. In fact there seems to be no way of explaining a move as dramatic, permanent and hostile to the interests of collegial governance as the elimination of regular faculty meetings except as a bold effort to wrest control of the school from the faculty and to place it in the hands of the high school committee and its newly appointed president. Once again a comparison with the Maguire era is appropriate. Then the board was faced with a demonstrably ungovernable faculty that was resisting board endorsed policies. Governance issues and policy issues were at that time combined, with the majority of the faculty supporting collegial rule and hard discipline while the president and committee backed administrative authority and the discipline. At that point the board chose to fire everyone and rehire most of them in a show of force that nonetheless left the structure of collegial governance intact. This time however the governance and policy issues had become separated. The board and the new president had accepted the faculty's own majority plan for curriculum change and thus there was no need to impose it on the professors. One need recall that Maguire had raised a challenge to collegial authority only in pursuit of his policy goal; and when the goal was finally achieved, the challenge was dropped. But in 1888 the challenge to the faculty's right to govern was unmuddied by any other issue. The professors had just emerged from a two-year period in which they had experienced complete collegial license in the absence of presidential restraint. The question facing board, committee and president was not how can we get them to accept our new policy but how can we gain control of them?

The answer was to curtail their meetings. Under the new administration the meetings that did take place were largely routine affairs to approve the list of candidates for graduation, write letters of condolence and so. Missing entirely from the minutes of these meetings is a sense of involvement in the high school's day-to-day discipline, testing, instruction and policy adjustment. That kind of faculty involvement in the running of the school never fully returned. In this sense, then, there are only two periods in the history of internal governance at Central High School -- before and after 1888, representing the collegial and post-collegial eras.(26)

There is a suggestive bit of evidence that the faculty was less than grateful to the man who accepted its radical curriculum and denied its traditional rights. If there is one constant that runs through the minutes from the start to the present it is the custom of adopting resolutions of congratulations and condolence for presidents and professors who resign, retire or die. The typical pattern was that at the meeting where the news first came out, a committee was formed which was charged with the responsibility of composing a series of appropriately florid resolutions hailing the person's devoted service and great character. At the next meeting these resolutions were read into the minutes, passed unanimously and ordered printed in the newspaper and presented to the person or his family. This was the standard pattern. When Johnson left, however, the faculty took no action at all.

The Transition From Political to Administrative Governance

When Thompson was made president in 1894, the school's mode of governance shifted part of the way back toward collegiality, especially in the beginning. The most obvious sign of this was in the frequency of faculty meetings. Thompson held 24 meetings in his first year, the same number called by Johnson in five years. The content of these sessions was also refortified. Once again the faculty found itself discussing and passing on a variety of academic and administrative issues such as promotional policies, rules for behavior, rosters and special student requests. In addition, Thompson's innovations at the school -- for example, a revised grading system -- were first proposed to faculty committees and then approved by the faculty as a whole.(27) By contrast Johnson had never sought approval for his curriculum reorganization. Also Thompson's reforms often required regular faculty intervention. For instance, he dropped the system of promoting by general average, requiring instead that if a student failed any of his courses he could only be promoted with the condition that he remedy the failures by extra work or special effort. This left the faculty in the position of having to decide for large numbers of students if and when each case merited the removal of the condition. The same situation arose with the new rule that students with a high average could be exempted from final exams, with the faculty deciding a number of marginal cases.

There are several explanations for this partial return to faculty governance. In part it may be a reflection of Thompson's personal experience and viewpoint. As was discussed in the first chapter, Thompson was fired from his post at Penn, in spite of his popularity with students and public, through the efforts of the provost and board of trustees. Perceiving himself as victimized by an administrative coup, he may have felt uncomfortable stepping into the shoes of Johnson the usurper. Under these conditions the faculty's traditions of democratic government by parliamentary procedure may have been reassuring to him, though still considered threatening by the school board. Historian Cornog describes Thompson's frame of mind this way:

> The relation of Dr. Thompson and his Faculty was one of mutual and occasionally guarded respect... The new President had been warned by members of the High School Committee of the Board never to call a Faculty meeting except to vote the graduation of the Senior Class. Characteristically the good Doctor called a Faculty meeting the day after his inauguration. He has gone on record stating that "during his presidency (he) submitted nearly every question to their (the Faculty's) judgment, and often acted on their decision, even when it did not quite coincide with his judgment."(28)

Aside from these personal considerations, however, Thompson may have found that the board had pushed the school too far in the direction of administrative rule too soon. Johnson's premature exit may have been interpreted by him -- and I think rightly so -- as a sign that at this stage the school could not be run by administrative means alone, that its governance required faculty participation though perhaps in a more limited form. This parallels a situation recounted in chapter one when the first court-appointed school board in 1868 dropped Central's admissions exam on the assumption that it now had sufficient administrative authority to run the district without having to rely on Central's indirect emulative influence. However, nine years later the exam was restored, in a restricted form, and remained in existence until the end of the century. In both the school system and the high school, unadulterated administrative rule was not feasible in the early days of administrative expansion, and for a time portions of the pre-existing system of governance had to be preserved.

As with Central's admissions exam, when the school's collegial form of governance was restored under Thompson, it was under terms which sharply restricted its scope. Powers which had for 50 years been exercized by the faculty as a whole were rapidly being vested in a series of functionally differentiated sub-groups of the faculty. Two types of groupings played an increasingly prominent role in governing the school -- departments and committees.

About the structure and activity of departments the minutes and school histories are largely silent. What is known about them is that after the first few years of

Thompson's administration all professors had been organized by academic area into departments, that department heads were paid $500 more than senior professors and were expected to share in much of the administrative work which had formerly fallen on the faculty as a whole and on the president, that departments held regular meetings about routine issues which never reached the faculty meeting and that the faculty frequently referred matters to a particular department or to the department heads collectively.

On the subject of committees the minutes are more revealing. The activities of the faculty during Thompson's years came increasingly to revolve around a growing number of committees. The faculty occasionally created temporary committees for special purposes, but it maintained a remarkably large number of standing committees as well. The following is a list, culled from the minutes, of permanent committees of the faculty in existence during at least part of Thompson's 26-year term:

roster
lateness
special cases
hygiene
rules
(public) lectures
library
six year's course (city college status)
students' work
distinctions
scholarship awards
school records
recess
finance

police (punishment)

These committees differed from those that existed before 1888 in more ways than numbers. In the earlier system, committees were established typically to formulate difficult policy issues into a report which could then be voted on by the faculty. The committee proposed and the faculty acted. Increasingly however the movement was now in the other direction: the faculty referred to a committee and the committee then acted on its own. Only occasionally did a committee ask the faculty for guidance. More often it seemed to carry out its work -- one segment of the administrative duties of the school -- by itself but with its actions apparently carrying the authority of the full faculty.

As departments and committees took on an increasing share of the governance of the school, the minutes show faculty meetings becoming more perfunctory. By 1910 the parliamentary niceties, formerly recorded so punctiliously, are mostly gone. Before 1888 every action of the faculty, including individual cases of discipline, had to be put in the form of a motion and handled with due process. The minutes were required to record every motion and the mover's name as well as any amendments and the outcome. After the half-way point of Thompson's tenure, however, the minutes skip most of the formalities and record only results -- the active mover now turned into the passive voice. Compare the following two excerpts from the minutes, both of which are typical:

> March 15, 1888
>
> A stated meeting of the Faculty was held, Prof. Hopper in the chair. All present except Prof. Taylor. The minutes of the last meeting were read and approved.
>
> Prof. Greene summoned Rondinella of B before the Faculty upon the charge of "Contempt for punishment", and moved that he be marked 20 notes. This motion was amended so as to read 10 notes instead of 20, but the amendment was lost. A further amendment to make the punishment 15 notes was carried...(29)

> March 23d 1910
>
> A meeting of the Faculty of the Central High School was held after the school session.
> Dr. Thompson presided.
> The application of Falkenstein was granted; that of Langan D2 was refused.
> Dr. Haney was appointed to write a letter of thanks to...(30)

There are two other ways that faculty power was limited during the Thompson administration, both revolving around the president himself. One is that in 1896 he was given money in his budget for the first time to pay for an assistant to the president. This was the beginning of a full-time administrative staff in the president's office made up of people without the conflicting duties and loyalties of department heads and committee chairman. The other is the long-standing latent administrative authority of the president to act contrary to faculty wishes, however democratically expressed. A former professor recounts a faculty meeting at which Thompson cast the only vote against a motion and then

> announced that the motion was lost. The faculty sat aghast. Serenely, then, Dr. Thompson explained that he, not the faculty, was responsible for all that transpired in the school; therefore, when the faculty voted to do something that he felt was injurious to to the interests of the school or the taxpayers, he was obligated to annul such action.(31)

If we consider the general course of collegial governance at Central High School from 1888 to 1920, we find that it disappeared almost entirely in the first five years, then was partially restored only to enter into a long-run decline. Johnson, who was hostile to faculty involvement and who had the support of the committee in this view, deliberately reduced the collective actions of the faculty to the absolute ceremonial minimum. However Thompson, who looked with favor on faculty participation, restored the faculty meeting to some of its former prominence. Increasingly however the form of faculty involvement in school governance changed from collective action in a parliamentary body to the narrower involvement of individual professors in specialized administrative units such as departments and committees. Whereas for 50 years the faculty as a whole had governed the school as a whole, now the faculty existed as a set of functionally differentiated sub-groups whose duties had more to do with administration than government. At the level of the school then, the regulation of daily affairs was carried out by the whole structure of administrative units and by the only individual not trapped in a specialized role within that structure -- the president. As faculty involvement narrowed, the president's influence grew, for increasingly he was the one person "responsible for all that transpired in the school."

The classic organizational reason for this differentiation of governance is the faculty's sharp increase in size. As Table 2.1 illustrates, the growth in size of Central's faculty during the years of collegial governance was very slow -- from 10 in the 1840s to 16 in the 1880s. The number of professors increased at a faster rate during the Johnson years, but the first dramatic rise took place in Thompson's first year (1894) when the number jumped from 23 to 28. From here on the growth rate took off. By 1899 the faculty was exactly twice the size it had been just six years earlier, by 1908 three times and by 1913 four times the size of the 1893 faculty. When Central lost its annexes in 1915 the number of professors declined for a time, but another sharp increase materialized in the early 1920s. Collegial governance may work well with a stable group of 15 or 16 professors and a student population of 500, but to attempt to decide the daily affairs of 2,500 students in a parliamentary body of 100 is perhaps less than realistic.

By the 1920s, faculty meetings were becoming even more devalued. President Haney called meetings usually only three or four times a term, typically at the start and close. The minutes show that he had little enthusiasm for them and even less confidence in their usefulness:

> Dr. Haney favors departmental group meetings rather than meetings of the entire faculty. 9/5/21. (32)
>
> Dr. Haney expressed a willingness to have more faculty meetings if its members so desire, but wants the meetings to count for something more than mere routine that can properly be cared for elsewhere. 12/13/21. (33)
>
> Dr. Haney informs us that a number of the men have expressed a desire for more frequent meetings even if partly for social reasons. 1/11/22. (34)

So much for collegial governance.

Only two aspects of faculty meetings during this era require comment. One has to do with the tone of the minutes starting in the 1920s. These meetings are all Haney: he makes announcements, asks questions, issues warnings and generally uses each meeting as an administrative forum rather than participating in it as a collegial gathering. This appears most tellingly in the phrase, repeated frequently in the minutes, which starts the last quotation: "Dr. Haney informs us..." The minutes of the collegial faculty always treated the president as a member, not as one apart. None of the secretaries of that era used the word "us" because it was understood that all motions and all comments were made to the faculty as a whole. But by Haney's administration faculty meetings had, to a considerable degree, turned into an occasion for exchange between the president and the faculty, "him" and "us". The other striking element of these meetings is that once the president's business is out of the way, an extraordinary amount of time is spent in discussing the concerns of various teacher associations. The arguments are not abstract but usually focus on pay levels and lobbying efforts. This represents another great leap -- from collegial governance to the threshold of collective bargaining. But this leads us to the subject of the second section of this chapter -- the changing characteristics of Central's professors.

Conclusion

Charles Bidwell has identified a form of organizational tension within modern school systems which provides a useful framework for analyzing the changing pattern of internal governance at Central High School.(35) He notes that within schools the division of labor by age and (in secondary schools) by subject gives each teacher relative autonomy over his own classroom while within the system each school functions as a relatively self-sufficient unit. The result is the "structural looseness" characteristic of school organization. But this tendency toward autonomy is countered by the tendency of system administrations toward the extension of bureaucratic controls downward into individual schools and classrooms.(36)

It is this tension which emerges as the principal theme of this historical review of governance at Central in much the same way that it emerged from the discussion of relations between Central and the school system. In the first chapter we saw how the autonomy of the school was at first nearly absolute, how it became compromised in the 1870s and then finally how it was subjected to the bureaucratic authority of the superintendent in 1912. But in this chapter the focus has been on teacher autonomy in school governance, which, in parallel fashion, was also at first quite strong but which lost ground sharply to presidential authority in 1888 and then slid into subordination by the second decade of the twentieth century.

These events in the history of Central High School can help develop Bidwell's formulation in several ways. For one it adds the element of historical process to a model of school organization which is focused on the static relations within and among contemporary schools. The most significant finding in this regard to emerge from the first two chapters is that, although the tension between autonomy and bureaucracy both within the system and within the school existed at the very start and persisted throughout the school's history, the relative balance between the two shifted radically. In other words this organizational tension is not some timeless and inexorable function arising from the nature of schooling but is the consequence of historical developments in inter- and intra-organizational relations. In the case of Central High School it is clear that for both the school and the faculty their first organizational position was one of relative autonomy and that this situation lasted for about 50 years. Bureaucratic controls were then imposed on both and both hotly resisted, at least for a time.

However an even more important finding of this study is that bureaucracy arrived not only through imposition but also at times through the active participation of the school and of elements within the school. Central's presidents and professors were engaged from the start in promoting the development of hierarchical control and centralization within the school system -- not out of love for bureaucracy but out of concern for institutional status. Central's position at the apex of the city's educational pyramid meant that by nature it trained ambitions upward (through emulation) and spread regulation downward (through the form of selection). Therefore any actions which enhanced the high school's position and the positions of those associated with it also promoted an incipient form of bureaucratic control.(37) During the school's glory years -- from 1838 until 1868, when the quota system was introduced, and to a lesser extent until 1883, when the first superintendent was appointed -- its president and faculty were the closest thing that the pre-bureaucratic school system had to an administrative staff. They tested teacher applicants, ran the evening school, advised the board on educational policy and in effect designed the grammar school curriculum by writing Central's admissions exams. Then the board in 1868 began turning its enhanced administrative powers on Central. And when a series of superintendents later sought to expand their bureaucratic control over the high school as well as the lower schools, its representatives fought vigorously but to no avail. Inadvertantly the school had helped build and strengthen the centralized and hierarchical administrative powers to which it finally itself succumbed.

A similarly complex process was at work within the high school, and the issue here was governance. The faculty as a collegial body dominated the school during its first 50 years, but from the time of Bache's reorganization (1840) the president had powers delegated to him from the board of controllers that were distinctly hierarchical and administrative in character. These powers remained largely latent in the early years as President Hart and Riché both chose to emphasize their role as presiding officer of the faculty rather than their role as agent of the board. But Maguire, who was president between the other two, with board encouragement chose to exercise his administrative authority by adopting policies opposed by the faculty majority. The ensuing bloodbath demonstrated the credibility of both faculty autonomy (getting rid of Maguire and some of his supporters) and of the administrative authority within the school (getting rid of some Maguire opponents and retaining the new policies).

I use the word administrative rather than bureaucratic to describe the authority delegated to the president from the board because the latter failed to establish even a small bureaucracy in the system until the opening of the superintendent's office in the 1880s. But this form of authority did have bureaucratic elements to it: it originated from a higher level of organization and was exercised over a lower level, it devolved upon an office rather a man (Maguire had less personal authority than Hart but exercised more authority of office) and it was used in pursuit of traditional bureaucratic ends (e.g., reducing arbitrariness in grading). Therefore just as the school as a whole tended to promote bureaucratization, its presidents retained the (rarely exercised) potential for proto-bureaucratic intrusion into faculty autonomy -- even in the absence of a real bureaucratic structure.

President Johnson, apparently with the support of the board, chose to use his anti-collegial powers quite directly by effectively ending faculty meetings during his tenure. But the more interesting case for our purposes is his successor, Robert Ellis Thompson. For here was a man who spent two decades as the articulate and inveterate opponent to the spread of the superintendent's bureaucratic controls into Central High School, yet this was also the man who propelled the internal governance of the school into an increasingly bureaucratic form. The governing duties of the faculty as a whole were reduced, replaced by a large number of specialized committees and departmental organizations. These changes represent a dramatic series of shifts in the direction of bureaucratic governance even if, as Bidwell notes, that end is never fully achieved in schools. These changes were bureaucratizing in character primarily because they transformed a political process of internal government into an administrative one. Under the collegial system each professor took part in a collective resolution of every major issue before the school (and many minor ones), for the faculty was constituted as a parliamentary body and each member was a legislator. But after 1910 issues that had previously been debated by the faculty as a whole in a thoroughly political way were now dealt with almost entirely within the narrow confines of a small group of specialists. Under these circumstances political problems became administrative ones because they were now seen by the specialized unit as part of a series of similar problems to be handled routinely according to the set procedures of the unit. These characteristics of Thompson's governance -- specialization and the triumph of administrative routine over parliamentary procedure -- were decidedly bureaucratic in character.

Thompson thus helped promote bureaucracy within while fighting it off from without. I would like to suggest that his actions are less contradictory than they appear. The problem lies in the fact that bureaucracy is not a concrete entity but a high level abstraction defining a form of organization whose manifestations are numerous and varied. As a result it is quite rare for a person to take a stand for or against bureaucracy in all its forms. In practice "it" is normally seen as a series of unrelated organizations whose bureaucratic character may be of only minimal concern but each of which presents a separate problem to the actor and requires an independent response. Thus when we saw Central High School representatives promoting bureaucratization within the school system in the nineteenth century and fighting it in the twentieth, it was not because they changed their minds about bureaucracy. They never supported it in the first place but instead pursued actions which enhanced the status of the school and its faculty and whose side effect was bureaucratization. Likewise their later opposition was not so much to bureaucratization as to the process of subordination, which was now for the first time directed against them. In the same way Thompson could stand against bureaucracy when it threatened the status of his school and its president but could choose to employ bureaucratic forms to help with a very different problem within Central. He was faced as administrator with a very rapidly growing population of students and teachers which was unmanageable by parliamentary methods designed for smaller numbers and a simpler curriculum. The social technology (38) of bureaucracy was available so he pragmatically adopted it. Just as the early presidents promoted bureaucracy within the system, he promoted it within the school. But like most of those who have aided the advance of bureaucracy over the years, the Central presidents had considerably less abstract goals in view.

Therefore from the point of view of this case study, the tension which Bidwell identified between the autonomy of schools and teachers and the bureaucracy of school systems can be viewed as a form of ongoing organizational conflict in which the advantage over the years has decidedly shifted from the former to the latter. In addition this study has shown the complexity of this interaction, for bureaucracy was not only imposed by the system but also arose within the school. Central High School promoted bureaucratic traits in system organization 40 years before the system had a bureaucracy of its own. And within Central's governance processes bureaucracy arrived in part from the system, but in part it arose from the efforts of Central presidents to adapt to internal administrative pressures while actually opposing the intrusion of the system hierarchy.

2. PROFESSORS

The aim of this section is to provide a quantitative portrait of Central professors from two different perspectives. First I will make use of biographical data on the men who taught there in the nineteenth century in order to sketch the pattern of their changing social characteristics. Second I will examine the pay scales of Central presidents and professors compared with other public school principals and teachers in the city. The intent here will be to identify the relative status of the Central professor and to trace the changes in this status over the school's first 100 years.

Social Characteristics of Central Professors

Franklin Spencer Edmonds was a Central alumnus and professor who published the first thorough history of the school in 1902, in time for the dedication of its new building. In the back he included a capsule biography of every man who had taught there between 1838 and 1900.(39) In considering how best to summarize this information, I rejected the idea of computing a simple average of each characteristic for all professors. One reason for this was noted in the previous section: the faculty experienced a sudden rapid growth in the 1890s. A total of 120 men taught at Central between 1838 and 1900, but 40 of these -- one-third -- were hired in the seven years following 1893. Averages in such a situation would only be misleading. The second reason it that the matter of most interest about the faculty is not its central tendency but its changes over the course of the century.

What I did therefore is examine the whole faculty at ten-year intervals between 1840 and 1900. (See Tables 2.2 to 2.6.) Each of these seven groupings is a sample which consists of all the men teaching at the school in the given year. One consequence of this approach is that some professors are left out, namely those who arrived after the start of the decade and left before the end. Another is that the longer-tenured professors appear in several successive samples.(40) A third consequence is that the "average" column on the far right of the tables has a peculiar meaning. It shows the mean of the seven sample averages for a given variable -- not the average for all professors. It can thus be interpreted as an estimate of that variable's value for the average Central faculty, where the average faculty is the average of professors weighted by years of tenure.

The procedure to be followed here will be to work through the accompanying tables year by year, noting some of the distinctive characteristics of each succeeding faculty sample and some of the long term trends.

1840

It is to be expected that the first sample should be strikingly different from the others. For since Central was the only full-fledged high school in the region when it opened, there was no local market of high school teachers to draw on. In addition since the city's grammar schools were organized on a professional (non-Lancasterian) basis at the same time Central was created, there were no public grammar school masters to be employed either. So half of these professors were drawn from private schools and the rest came from a wide range of occupations including the law, medicine and art. They had less formal education than those who followed but seven of the eight published books at some point during their lives, four of them texts. Hired at the age of 42 (10 years older than the faculties that followed) from a wide variety of backgrounds and staying at the school only 10 years (less than half as long as later faculties), these men appear more independent and less career bound than later professors. Perhaps this explains why the early presidents found them so intractable and why three of the eight were eventually fired by the high school committee.

1850

The character of the faculty just 10 years later presents a remarkable contrast. The age at start dropped for 42 to 31 and total years at the school rose from 10 to 19. Both of these new figures are close to the norm for later faculties. Taken in combination, these facts signal a major change in the occupational character of Central professorships. Where earlier they had been shorter term positions for established older men, they were now becoming jobs for younger men who held them for the better part of their working lives. Only 12 years after its opening, teaching at Central was becoming a career. And one group that was already taking advantage of this career opportunity was the school's own alumni, two of whom were represented on the 1850 faculty. While alumni later became the major source for professors, what is striking here is how quickly after the opening of the school their influence was felt. The first class graduated in 1842 and one year later the first alumnus was hired. Eventually four members of the first two entering classes became professors.

1860

In this year the two variables that jumped so dramatically in 1850 -- age at start and length of tenure -- were virtually unchanged. The pattern was becoming set:

Central professorships were now career positions for younger men. In addition there was very little change from the first two samples in the proportion with a college education and in the number of distribution of degrees. But there were some dramatic differences which characterized this 1860 group. Of these men 53% had been employed in some area of education compared to 30% of the earlier faculty samples. This was not an isolated movement but part of a long term trend at the school, as shown by the fact that the proportion with a background in education reached 81% twenty years later. Even more tellingly, five of the eight experienced educators on the 1860 faculty had worked in public schools, three as grammar school principals and two as (unspecified) teachers.(41) Put another way, 33% of the 1860 professors had moved to Central from the public schools compared to only 10% (one man) in 1850, 50% in 1870 and 63% in 1880.

If a Central professorship was established as a career position as early as 1850, there was as yet no set career path a young man could follow in order to achieve this position. But in 1860 the outlines of such a career path began to emerge, to be confirmed in later years: if a man proved himself as a teacher in the public schools, he could win a promotion to the next step up the ladder, a post at Central. The fact that, as was just shown, the number of public school veterans on the Central faculty grew from 10% to 50% in only 20 years certainly supports this career ladder view. Another piece of evidence is the relatively high compensation of high school professors, a point that will be dealt with in the last section of this chapter. A third source of support can be found in the discussion of Central's entrance exams in the first chapter. It should be recalled that this exerted a powerful influence on the city's grammar schools because it provided an index rating of the relative capabilities of the grammar school principals -- namely, the proportion of their students who passed. Such a system fostered intense competition among these men, who sought to prove themselves not only to their local school boards but also to the high school faculty and committee. For already in the 1860s (42) a high school professorship was being seen as the natural reward for those who have proven their efficiency at the next lower level. And conversely the data in this section show that the grammar schools were becoming seen as the natural source for Central's faculty.

Just as the high school promoted hierarchy among the system's schools in the nineteenth century, it also promoted a hierarchy among the city's teachers. Along with this new career ladder came a new measure of competence grounded within the field of education and, more narrowly still, within the public school system. Nearly half of Central's 1840 and 1850 professors were selected on the basis of attainments outside of education while in 1860 only one-fifth of the professors had non-educational experience and only one-sixth had non-public teaching records. The newer professors thus lacked the more independent status of their predecessors. They were more career bound, both because they were increasingly without proven competence outside of teaching and because they were irresistibly attracted by Central's elevated character. Symptomatic of this shift is the proportion of each faculty with books published, which declined from 88% to 50% to 27% between 1840 and 1860.

In addition to public schools, there was another source for Central's professors which leaped into prominence by 1860 and retained its position for the rest of the century: Central graduates. While in 1850 20% were alumni, in just ten years the proportion had risen to 47% -- a figure that was to hold constant all the way through 1900. Why did Central hire its own former students so early in its history and so often thereafter? It was not a policy without critics: in the 1880s the cry was raised that the school's perceived decline was attributable to the in-breeding of the faculty.(43) But the practice persisted. One way of trying to explain it, at least in 1860, is to compare the characteristics of the seven Central-educated professors that year with their eight colleagues. Of course the alumni were younger than the rest, since they were mostly hired in the preceding decade, but in every other way they were remarkably similar to the non-alumni. They were no more or less likely to go to college or graduate or write a book. Their length of tenure at the school was similar: four of seven alumni stayed more than 20 years vs. five of eight non-alumni. Even their occupational histories were alike. Four of the alumni were educators, three public and one college, and four of the non-alumni were also educators, three public and one private. The differences in the remaining jobs seem largely attributable to age. For alumni there were two with no previous job shown and one case where Central was the first job, while for the non-alumni there was one unknown plus a consul, a lawyer and a doctor. (The latter two started with the school in 1838 and 1839.)(44)

One conclusion that can be drawn from the above is that the large number of alumni on Central's faculty were not simply the result of old-school favoritism in hiring. The fact that the alumni were so similar to the non-alumni in terms of experience, education and job tenure would seem to show that they were not judged by a special standard. There is also more evidence supporting this conclusion. During the late 1850s and early 1860s the high school committee tried a new system of selecting professors, one that was brought back again in the 1880s.

The committee would appoint a panel of outside experts who would administer written and oral exams to all applicants for a post and then present the committee with a table of scores ranking the candidates.(45) The coincidence between the rapid increase in the number of alumni professors and the initiation of a rigorously meritocratic selection process suggests once again that alumni were hired frequently because they were so often the best qualified candidates. Of course it is probably true that Central graduates were good test-takers, having survived grueling examinations at the end of every term at the high school; and that in an era of unstandardized curriculum, they were better trained in the areas tested than outsiders. Nonetheless neither of these points detracts seriously from the conclusion that Central hired so many of its own graduates because they were more likely than most to have the characteristics it was looking for in its professors.

The reason for this derives again from Central's unique position in Philadelphia's educational system. Until 1885, when Central Manual Training School was established, it was the only public secondary school for boys in the city. From then until 1912, when the district high school system was established, it was still the only four year academic high school for boys. Given this situation the high school was forced to draw heavily on its own ranks. The alternative was to go far afield, both geographically and ideologically. Edmonds' biographies contain only sparse information on the secondary education of non-alumni professors, but it appears that Central drew these men largely from New England (where public high schools were numerous), from abroad and from area private schools. The latter course, while unavoidable at the start, was likely to be increasingly embarrassing in light of the school's aggressive public school ideology: recall that it refused to admit students from private schools. Thus as soon as Central's own graduates were available, they became the natural pool from whom its professors were selected.

1870

The trends started in earlier years became even more visible in this faculty. The number of years at Central rose by five years to 25 and correspondingly the age at leaving rose to nearly 56. There were slight increases in the number who attended Central and the number with higher education. Publications remained low. The proportion of professors with prior experience in education continued to move upward from 53% to 69%, and the proportion with public school experience rose from 33% to 50%.

Undoubtedly the most novel finding about the 1870 faculty, however is that a startling total of five of its 16 professors were M.D.s. Table 2.4 shows that this was not an isolated phenomenon. Central in fact was never without a physician on the faculty during the nineteenth century: there was one in 1840, two in 1850, three in 1860, five in 1870 and 1880, four in 1890 and three in 1900. Why, one might well ask, did so many doctors teach in a public high school? A direct answer is not possible on the basis of Edmonds' data, but some information about these men is known. Stepping outside the faculty samples for a moment and looking at all the men who taught at Central from 1838 to 1900, a total of 16 out of 120 (13%) were doctors. They stayed at the school for a shorter time than other professors, with an average tenure of 13 years compared to 23 years for the faculty as a whole. Predictably, perhaps, 11 of the 16 taught one of the sciences -- most often chemistry or anatomy -- but three of the longest tenured doctor-professors taught the distinctly unmedical subjects moral, mental and political science, commercial calculations and English literature. (Two were assistants with no subject named.) Finally, the influx of doctors was concentrated in time even more than is shown by the samples, for nine of the 16 doctors were hired between 1858 and 1868 -- five of them in the three years immediately following the Civil War.

Seven of the 16 stayed five years or less and thus for them Central was a temporary stopping place along a larger career path. But the nine remaining doctors stayed ten years or longer: for these men teaching at Central was career choice and thus they are of greater interest to this study. One explanation of the latter phenomenon is that American physicians in the mid nineteenth century had more general education (especially in the sciences) than they had special training in skills that would be of therapeutic benefit to patients. They understood little about the causes of major diseases and the remedies they prescribed were as likely to cause harm as bring health. Given these circumstances it is not surprising that the profession's prestige was a low point in the middle of the century or that the demand for physicians was exceeded by the supply. The result, according to one historian of American medicine, was that many doctors sought to supplement their incomes by a variety of means, particularly those that capitalized on their unchallengeably superior education.(46) Teaching was certainly one way to do this.

However to return the focus from the profession to the school: even if these physicians were held in relatively low public esteem compared to their later ascendance, their willingness to choose a Central professorship as a career is a sure sign of how highly esteemed these posts were at the time. If so many physicians felt that teaching at the high school would not represent a step down in life, it is as of little wonder that so many grammar school teachers considered it a major step up -- a prize well worth competing for.

1880

The faculty this year had demographic characteristics which marked it off from all others. From 1840 to 1900 there was no sample that was older, older at start, longer at the school or older at leaving. Just comparing with 1870, average age rose from 39 to 47, age at start from 31 to 37, years at school from 25 to 30 and age at leaving from 56 to 67. However these averages hide the fact that the professors were divided into two halves with distinctive characteristics, one hired before 1870 and one hired afterward. The earlier group, which included three professors from the Hart era (1850s), remained at Central during the course of their careers for an average of 40 years apiece compared to 26 years for those hired in the previous decade. Thus while the new professors had a length of tenure near the norm for all faculties, the ones hired in the 50s and 60s had an extraordinarily long-lived influence on the school. Their persistence on the faculty tended to mask some of the changes that were occurring in the character of the newer members. For example, the number of alumni dipped only slightly between 1870 and 1880 from eight to seven. But the only reason this drop was not greater was that the alumni professors tended to stay so long. Five of the eight pre-1870 professors were alumni compared to only three of the eight hired after 1870. In addition four of the earlier professors attended college compared to five of the new group, but three of the former were M.D.s compared to two of the latter. Thus while in aggregate this represents a gain of only one college trained professor over the 1870 faculty, it suggests a shift away from medical school training and toward a more general form of college preparation for Central teachers.

In addition to being the year of the long tenure, 1880 was the year that the trend toward hiring an increasing share of Central's faculty from the pool of experienced public school teachers reached its peak. In 1850 10% of the faculty had taught previously in the public schools and in succeeding samples the proportion rose to 33, 50 and finally 63% in 1880, only to trail off sharply in future years. The proportion of professors with any form of prior experience in education followed the same curve, growing from 30% in 1850 to 53%, 69% and 81% in 1880, once again dropping off in later samples. This was the year therefore that Central reached its peak as an object of occupational emulation for teachers at less exalted institutions in the school district. After all, at that point more than three out of five Central professors had won their positions based at least in part on their performance as teacher in the public grammar schools. It was a faculty then of upwardly mobile professional educators who had earned their promotions on average at the relatively mature age of 37.

This may account for why Central's professors in the 1880s had a reputation for being disharmonious and ungovernable in the view of the school board and the press (as was mentioned in the first section). It seems reasonable to conclude that the professors this year were a particularly ambitious group, with so many of them having sought and achieved their reward against considerable odds, and that they were correspondingly self-confident to the point of arrogance, with so many of them having already proven their professional competence and having had this competence certified by the appointment to the high school. Such men were not likely to see the pursuit of harmony and the compromise of interests as primary goals, nor were they likely to give up collegial governance and submit themselves to dictation from above (as happened in 1888) without a fight. In addition, these character traits should not be seen as peculiar to this faculty. It is a plausible hypothesis that ambition, self-confidence, contentiousness and devotion to collegiality should have characterized the faculty in other years in proportion to the number of public schoolmen in each.

1890

The demographic character of this sample returned to a more normal pattern after several of the school's hoariest professors retired. Compared with 1880 average age dropped from 47 to 42, age at start from 37 to 30, years at school from 30 to 28 and most dramatically, age at leaving from 67 to 57. As with the previous sample, the most instructive way to examine this faculty is to compare the old professors with the new. This is especially true since the faculty was the first in 30 years to grow significantly in size, from 16 to 20 men. Eleven professors from this year were also included in the previous sample (that is, were hired in 1880 and earlier) while nine came to the school between 1881 and 1890. The differences between these two groups are striking. For example, the proportion of the faculty that was college trained rose slightly this year to 60%, the highest level up to this point. But surprisingly this level was attained not so much through the addition of college-trained recruits but through the retirement of professors who did not attend college. The result was that seven of the eleven older professors had received a higher education compared to only five of the nine new men.

This is a puzzling finding because it seems to represent a turning away from Central's pattern since 1840 of steady increase in the proportion of college graduates on the faculty -- and during the very decade that the school changed into a college preparatory institution. One way of trying to understand the situation is to note that although the proportion of college men among the new professors declined, the proportion of M.D.s among these same new college men declined even faster. Overall the number of physicians on the faculty dropped from five to four between 1880 and 1890; but whereas three of the seven older college-trained professors were M.D.s in 1890, only one of the five new college graduates had a medical degree. This development is a continuation of the earlier-noted trend in which medical school was becoming gradually less important as the educational preparation for teaching at the high school.

Therefore the evolution within the college-trained portion of the faculty continued, but this still does not explain why that portion was smaller overall for those hired during the 1880s than for those who started in the previous decade. There were two factors that were strongly related to college attendance: men hired since 1880 were much more likely to have gone to college if they were not Central alumni and if they were hired late in the decade. Six out of nine new professors were alumni compared with five of 11 older men; but more significantly, among the new group all four of the non-college men were alumni compared to two of the five college men. In addition all four non-college men were hired before 1889 while four of the five college graduates were hired in 1889 and 1890.

The relationship among these three factors during this decade is explained by the dramatic if short-lived return of an earlier hiring practice, competitive examination. This system was adopted for a time during the Maguire administration and then dropped only to be resurrected in the early 1880s and abandoned again late in the decade. The exact timing of its start and end during either period is unknown but in the latter it is clear that it arose during the last years of Riché's presidency, providing one of the reasons for his decision to leave in 1886 (47) and that it continued during the interregnum that followed. It is less clear but quite probable that the practice ended with the inauguration of President Johnson near the end of 1888. The time during which competitive exams were being given closely matches the period during which the largest number of alumni and non-college men were being hired.

The question is why such exams would have favored candidates with these characteristics. As for alumni, it should be recalled that the sharpest increase in alumni on the faculty was registered in 1860 during the earlier experiment with selection by exam. In discussing that phenomenon I suggested that Central graduates performed so well on these exams because of their superior preparation both in the substantive areas being tested and in examsmanship. This fairly obvious point is confirmed in the 1880s, where the exam returned and alumni dominance reasserted itself. What is more interesting in the second case, however, is that all four of the alumni hired by examination were not college trained.

I see two important conclusions that can be drawn from this fact. One is that Central's frequent boast of providing a college education may have had substance to it. After all, during the few times that Central graduates engaged in open meritocratic competition with college men for faculty posts, the alumni trounced the opposition. The other conclusion is this: as long as appointment to the high school was based on a test of the candidates' ability to perform as professors, the alumni won handily. However when the criterion shifted from measure of performance to level of academic credentials, alumni dominance receded to the point of near equality. During the 1880s attitudes at the school were shifting in the direction of requiring a college degree as prerequisite for teaching there, and by 1889 this idea was clearly being put into action.

Central's brief experience with exams posed a warning about the new selection process. Perhaps competitive exams provided an imperfect measure of a candidate's ability to teach, but academic credentials could hardly be said to predict such ability reliably either. Yet it is worth noting that Central graduates were quite capable of acquiring college degrees (two out of five college men hired in the 1880s were alumni) while non-alumni college men were beaten badly by alumni on the examination. In other words by shifting selection criteria from testing to credentials, the school may have unnecessarily narrowed the field of choice and thus denied access to what otherwise might be demonstrably effective candidates.

A striking example is provided by the case of Albert H. Smyth. In 1886 he applied for a post at Central and found himself in competition with the post's temporary incumbent, Francis Thorpe. President Taylor preferred Thorpe, who had a Ph.D. to Smyth, who was an alumnus with no college training, and suggested that the latter enroll at the university. But Smyth persisted and the board ordered an examination; the result was that the high school graduate defeated his heavily-credentialed opponent. Thorpe went on to become a distinguished historian while Smyth quickly developed into one of the most enduringly popular men ever to teach at Central.(49)

One other development in the 1890 faculty deserves comment and that was in the area of previous employment. Overall the proportion of former public school teachers on the faculty dropped from the 1880 high of 63% to 45%. Six of the eleven older professors had prior public school experience (four of them alumni) compared with only two of the nine newer men (both alumni). While from 1850 to 1890 the primary route to a high school teaching job had led up the school system's promotional ladder, by 1890 the number following this path was declining. Instead a growing proportion of the professors -- 20%, up from 13% in 1880 -- were men who had come to the high school direct from college, without experience in the public schools or in any other job. This reinforces the point made earlier, that the shift toward selecting professors with college training changed the selection process from one of evaluating actual or potential job performance to one of simply examining academic credentials. By 1890 the dominant forms of performance measures during the previous forty years -- public school experience and competitive examination -- were either dying or dead. The freely competitive and relatively open market place for Central professors which had existed for most of the nineteenth century was giving way to a system of credentialism which imposed a severe constraint on the free functioning of the market by limiting the candidate pool to college graduates. Just as the school board was turning away from a market mechanism for controlling the school system (competition for admission to the high school) in favor of a bureaucratic one (regulation), it was also dropping the market selection of high school teachers (promotion and testing) in favor of a more formal and rigid standard for assessing qualification for office (college degree). (This line of argument will be developed further in the concluding chapter.)

1900

The 1890s were the years of the most rapid growth in Central's history. Student enrollment more than doubled and faculty size nearly tripled, rising form 20 to 55. The result is that the 1900 faculty is characterized by extremes. It was all at once the largest, youngest, best educated and least experienced group of professors that the high school had ever seen. With three-quarters of its members hired since 1890, it is hardly surprising that the average age of the faculty had dropped from 42 to 36 in 10 years. But its newness does not explain why this 1900 faculty was younger by a year at time of appointment than any previous sample or why it stayed at the school an average of four years less than the 1890 faculty. These developments had less to do with the novelty of size than with the continuation of trends already identified in the higher education and prior experience of Central's professors.

If we focus on the 41 professors who were hired after 1890 we find that 95% attended college. Thus the slow increase in the number of college-educated on Central's faculty over the course of the century -- which had accelerated in the 1870s and had slowed to a halt with competitive exams in the 1880s -- had swelled to a flood after 1890. Not only did nearly all of these new men go to college but at least 80% won degrees in the process, and the types of degrees they won were quite different from the previous pattern at Central. Throughout the nineteenth century by far the most common degree on the high school faculty was the M.D. (See Table 2.7.) But in 1900 only three out of 37 degree-holders were physicians and none of these had been hired during the previous decade. The M.D. was displaced by a variety of degrees. A liberal arts degree (B.A., M.A. and Ph.B.) was held by 27% of the 1900 faculty, a Ph.D. by 18% and a science degree (B.S., M.S. and Sc.D) by 15%. The sizeable number of Ph.D.s, all hired in the 1890s, shows that Central at the turn of the century still retained a considerable amount of its earlier prestige -- enough to attract doctors of philosophy to its faculty in the same way it had drawn doctors of medicine in the past.

By 1900 it was clear that Central was looking for education rather than experience in its professors. For while nearly all of its new men had attended college and many had advanced degrees, only 22% had any public school teaching experience (compared to 43% of the older men) and

41% had no experience of any sort since Central gave them their first job after college compared to 21% for the older men). Note that a promotion to the high school, even for a man with a college degree, was much less likely now than appointment direct from college

Summary

Only a decade after Central High School opened, an occupational pattern was emerging for its professors, and by 1870 this pattern was clearly defined. The modal professor was a man who had attended Central as a student, proven himself as a public school teacher and won appointment to the high school at the age of 30. If he had a college degree it was medical. For him a chair at Central was a career position, the top of the ladder, and he stayed in it for about 25 years. All of these characteristics set him off from the typical Philadelphia public school teacher in the nineteenth century. First of all the typical teacher, overwhelmingly, was a woman. Like other American urban school systems, Philadelphia aggressively feminized its teaching force ("for obvious reasons", as one annual report put it) (50) starting in the late 1830s and continuing throughout the rest of the century. But by 1870 this process had advanced so far that there were only 80 male teachers out of a total of 1,539 teachers in the system or 5%. (See Table 2.12.) What this meant was that all teachers were women except the principals and some of the assistants at boys' grammar schools and the professors at the high school.

While about half of Central's professors and a number of grammar school teachers were educated within its walls, as of 1873 about three-quarters of the city's teachers had attended Girls' High and Normal School.(51) Thus both institutions acted as normal schools; but naturally with the gross sexual imbalance in the system, it was Girls' that bore the brunt of this burden. The principal of the latter school estimated that of the 975 girls who entered between 1848 and 1859, 700 (72%) became public school teachers.(52) Central alumni records for the same period show that out of 2,934 entrants, only 15 (less than 1%) became grammar school principals or Central professors.(53) The boys' figures are undoubtedly less complete than the girls', but even if increased tenfold they would still demonstrate that teacher training was essential to Girls' High School and incidental to Central.

The Central professor during this era tended to start teaching immediately after high school, earning a position at his alma mater a dozen years of so later, while the typical Philadelphia teacher around 1870, who also started teaching after leaving school, generally quit to raise a family at the same age that the men were being promoted. One reason for this difference was cultural pressure on the woman to act out her domestic role. But in addition there was nowhere for a woman teacher to advance to beyond the position of grammar school principal. As will be shown in the next section, Girls' High School teachers earned less money than girls' grammar school principals, providing little incentive such as the men had. Moreover there is evidence that given such incentive some women would have made teaching at that level a career: Fishbane found that female principals taught for an average of 23 years -- similar to the figure for Central professors -- compared to female assistants who lasted only 12 years.(54)

Cutler and Fishbane (55) provide some evidence that female teachers were beginning to approach teaching as more of a career later in the century -- they had only stayed an average of five years in 1850 -- but otherwise there is little information on the developing occupational character of this group. However Edmonds' mini-biographies have shown that Central's professors underwent a dramatic transformation toward the end of the nineteenth century. The school board began to show a growing preference for education over experience in selecting men for the faculty. By 1900 the modal professor at Central High School was still an alumnus, but he was also a college graduate (not in medicine but in arts and sciences) and he had no experience at teaching or at any other job.

Prospective professors had been evaluated on a performance standard for 40 years -- success as a teacher or success on an examination -- but they were now judged on the basis of academic credentials. As a result of this change, male public school teachers found their career ladder cut off at the same point as the women did. They could rise as high as grammar school principal without college but no higher. This new situation put them on what must have been an uncomfortably more equal basis with their female colleagues at the same time that sex differences in pay were also being gradually eliminated. A reduced form of the separate and unequal status of Central's professors was preserved by the new system, but only temporarily. For the history of change in Philadelphia's schools was that changes introduced into the lower school reached the high school eventually, and changes affecting teacher status were no exception.

Status Characteristics of Central Professorships

It is my purpose in this section to explore the sources and status implications of a pattern of salary differentials that existed among Philadelphia school teachers during Central High School's first 100 years. The primary data for this discussion are found in Table 2.8, which displays salary figures for a variety of public school employee categories compiled from annual reports of the board from 1841 to 1934. My procedure for analyzing this table is to make a series of comparisons between categories and across time in order to isolate the effects of some factors while controlling for others.

A preliminary look through the data in this fashion reveals that the pay levels of Philadelphia teachers in the nineteenth and early twentieth centuries were stratified according to three distinct criteria: sex of teacher, position in school and level of school. For example it we compare the salaries of male and female grammar school principals -- same position, same level, opposite sex -- we see that for the first 40 years shown, the woman earned exactly one-half of the man's pay. (Note the fastidiousness with which the board calculated the women's raise in 1871: if the men received $1,815 then the women should receive $907.50.) In addition, of course, principals and teachers (usually called assistants) of the same sex and in the same school were paid at different rates. Only Central is shown in this fashion on the table but the differences held for all levels and both sexes. Finally, teachers of the same sex and in the same position in general were paid more at each higher level of school, in a rank order stretching from primary to secondary to grammar to high school.

Central professors found themselves in a highly desirable position at the apex of both the sexual and school-level hierarchies -- the best-paid teachers in the school system. And Central's presidents during the first 40 years (before the arrival of a superintendent) were not only from the dominant sex and the top school but held the first position there, making them the highest paid personnel of all. However my purpose in this section is not to focus on the accumulation of status hierarchies which produced Central's high salaries but to try to decompose these influences in order to examine the effect of each individually. In all of this my primary aim will be to use salary as a measure of the relative status of the Central professor in comparison with other Philadelphia teachers over the course of the school's first 100 years. And I will be trying to locate changes in the status of professors within the context of other developments already noted: changes in the status of the school as a whole, in the character of internal governance and in the social characteristics of the professors.

The first period in the history of professorial status stretched from 1838 to 1878. The most significant comparison here is between Central professors and male grammar school principals. We have already seen that these two positions were the top rungs in the male career ladder by means of which a few fortunate principals ascended to the high school. I want to argue that this process should be interpreted simply as a rise in school level and not as a decline in position from administrator to teacher. Until near the end of the nineteenth century, grammar school principals were not full time supervisors but were the principal teachers of their schools. Thus they had more in common with the senior professors at Central than with its presidents, the majority of whom, did no teaching.(56) The implication of this argument is that any differences in salary that appeared between the two during this period must be attributed to school level alone.

These differences were substantial. As Table 2.8 shows, male grammar school principals earned at the beginning only 67% of a high school senior professor's salary and their relative pay rose to a high of 83% at the end of the period. Put another way this means that promotion to Central promised the ambitious principal a potential raise of between 20% and 50%. This pay gap by itself provided a considerable incentive for principals to compete for the few available positions and thus helped establish both a career path for male teacher and a means for motivating compliance with school board policy. But if this pay differential was so useful, why did it narrow over time? During Central's first years, it may have served the same function as the school's marble facade and astronomical observatory -- to demonstrate forcefully that this was not a charity school but the sort of decidedly higher school, replete with well-paid and learned professors, that would attract middle class support. Central succeeded in drawing support to both itself and the school system, but it also drew fire. Some of this fire came from principals who felt manipulated by the competition over admissions and some came from political forces which portrayed it as aristocratic. What is significant in this regard is that the three years in which the salary gap between principals and professors narrowed most sharply -- 1846, 1853 and 1856 -- were times when opposition to the school was most intense, as recounted in chapter one. The most dramatic moment came in 1856 when city council actually cut Central's pay scales while leaving other teachers at the same level.

The other important salary contrast for this early period is between Central and Girls' High. The histories of the two schools are sufficiently parallel to invite comparisons. Girls' was founded 10 years after Central and until 1885 they were the only public high schools in the city. Today they are neighbors on Olney Avenue and they share the role of providing education to the city's high-achieving students. In looking at pay in the two schools we would expect to find some differences due to sex, since all teachers at Girls' were women. One way to isolate this sex factor is through comparing male and female grammar school principals; and in doing so we find that during the early period, the female pay handicap at this level was exactly 50%. Thus if sex were the only operative variable in this comparison, we would predict that Central professors would make twice as much as teachers at Girls'.(57)

In fact, however, they made between three to five times the women's salary. The logical conclusion from this finding is that teaching positions at Girls' ranked below those at Central -- to the extent that pay is an accurate barometer -- even when one controls for the effects of sex. Other comparisons reinforce this assessment. For one, the principal of Girls' High School was always a man during this period, but his pay ranged between 60% and 80% of that of Central's president and it stabilized after 1855 at the level of a professor's salary. For another, the teachers at Girls' High were consistently paid even less than female grammar school principals, and therefore this school never acted as the top rung in a career ladder for women in the way that Central did for men; on the contrary it represented a step down for the career-minded female teacher.

Salary evidence points toward the conclusion that Central professors in this era occupied an extremely enviable position, a position which high school teachers enjoyed in many cities during the nineteenth century.(58)

As men they started with a considerable advantage, but their high level of pay reflects an additional increment attributable to the elevated character of the institution itself. Such occupational preeminence helps explain why so early in its history a professorship at Central High School became a post which other teachers thought worth competing for, which even doctors considered worth aspiring to and which incumbents jealously guarded.

The extraordinary status advantage of the Central High School professor is even more marked if he is compared to the average Philadelphia teacher as opposed to those in the categories in Table 2.8. In constructing that table however I made two decisions about selection which precluded the possibility of making such comparisons in a systematic way. First I chose to display the salaries of only those educators who were closest to Central professors through the combined effect of rank of school and position within school. The focus is thus exclusively on high school teachers and heads and grammar school principals. The primary reason for adopting this approach was that I felt the argument would be most compelling if I could demonstrate deep and abiding differences in pay level between Central professors and those in the school system with the strongest competing claim for system resources. Also, in order to analyze the professors as an occupational group I needed to examine career paths, and this required comparisons with other groups in the system from whom professors were recruited. In earlier years the source was male grammar school principals and in later years teachers from other high schools.

A second decision about construction of the table was to record the highest possible pay level from the salary schedule of each occupational category rather than the average actual pay of those in the category. In part this was because it was impossible to obtain average figures with any reliability in later years. But in addition, from the point of view of trying to understand career paths, pay limits may be more important than averages. It was not the average grammar school principal who was promoted to the high school but the man who had already reached the top of his level, and his incentive to seek promotion is better measured by comparison with the potential rewards of the new position rather than with his starting pay or the faculty average.

While examining the top pay of the top positions in the school system is the most useful strategy for the purposes of this section, comparing Central professors to the average teacher is necessary if only to gain a glimpse of the chasm separating the highest and lowest levels of the city's teaching force. For reasons that will be explained more clearly below, 1879 is a particularly interesting year in which to make such a comparison because it marked a major turning point in teacher pay levels. In that year the average Philadelphia public school teacher was paid $484.14. The maximum pay levels of the various categories of educators for this year (found in Table 2.8) can be compared with this average figure by converting each into a multiple of it, as shown in Table 2.9. Of course the figures from the table are not directly comparable with the average figure because they are all maximums, thus biasing all of the teacher multiples upward. But in the case of Central professors the bias is less pronounced because, as was shown in the previous section, the faculty at this time was filled with long-tenured men who had already reached the top pay level. Even after discounting the bias of these figures, it is clear that the school board tolerated an extraordinarily wide range of pay levels within the Philadelphia school system. Central professors were being paid four times as much as the average teacher. This is a very different order of magnitude than was found in the comparison of professor with male grammar school masters. In this year professors earned 25% more than masters, but masters in turn earned 230% more than the average teacher in the city.

The salary differences between the top and typical teachers in Philadelphia can be interpreted in light of the social characteristics of the latter. Throughout the nineteenth century the average teacher in the Philadelphia and most other American cities was a woman in her early 20s who held the position of assistant in a primary or secondary school.(59) These traits put her at the bottom end of all three forms of stratification employed among teachers: she was a woman, she taught in the lowest level schools and she occupied a subordinate position within those schools. As a result, the question of why the pay range for city teachers was so broad can be reformulated to ask: what was the impact of each of these three stratification variables on the pay difference between the professor and the average teacher?

First, position: since there could be only one principal per school, it was inevitable that the average teacher should have occupied the assistant's position. However the professor was in a formally parallel situation, in theory subordinate to the president. Yet as we have seen, the existence of collegial governance in fact put the Central professor in a position of control which no elementary assistant could achieve.

School level and sex had a more obvious effect than did position. What needs to be stressed, however, is the overwhelming importance of numbers -- number of students, number of teachers, number of schools -- in determining the extent of this effect. Looking first at school rank, in 1880 the Philadelphia school district had jurisdiction over a total of 471 schools. (See Table 2.10.) Of these 79% were primary and secondary schools (60) for the simple reason that student enrollment was highest at these levels. It is useful to be reminded in the middle of a high school case study that in nineteenth century Philadelphia nearly everyone went through the early years of schooling while a smaller number went on to grammar school, fewer still graduated and very few indeed ever entered high school. Given the pattern of school attendance it was inevitable that the large majority of teachers would be employed at lower level schools. And it was equally inevitable that the few who did teach in a high school would be particularly visible. Table 2.10 shows that Philadelphia's educational pyramid in 1880 had a very broad base and then narrowed very sharply at the high school level. Only two out of a total of 471 schools were high schools, and only one of these was for boys.

Comparable figures on number of schools are not available for other districts because Philadelphia's secondary and consolidated institutions do not fit easily into the categories used in the reports of the Commissioner of Education. But Table 2.11 approaches the same point from a different angle by showing for 1880 the proportion of high school students to total students in a few large school districts and in the country as a whole.

Only 1.1% of all American public school students were enrolled in high school that year and against this figure Philadelphia's 1.4% compared favorably. However as the table shows, all the other large cities for which data are available (61) reported a higher proportion of their school population in high school -- between two and four times the national average. Thus Philadelphia's educational pyramid was narrower at the top than those of other major cities. This finding is in keeping with the passion for vertical differentiation exhibited by the city's school board from the very start. We need only recall that as early as 1840 it had inserted secondary schools between primary and grammar levels to create an unusually elaborate four-tiered school system, which it maintained through the end of the century. In addition the board had so refined the process of grading within schools that a student had to pass through 12 or 13 grades before reaching the high school.

I therefore wish to argue that Central was in a uniquely isolated and elevated position at the top of a highly stratified school system. The character of this position helps account for at least part of the privileged status accorded Central's professors. In terms of prestige, these men were not part of the faceless horde of teachers playing similar roles in a series of similar schools. In 1880 they were only 16 men out of the 2,075 teachers in the system (Table 2.12), who were performing specialized roles in the only institution of its kind; thus they were guaranteed a degree of prominence denied to the average teacher. In terms of salary, it cost the school board very little to overpay these 16 men in relation to the other 2,069 teachers and it may have been viewed as a good investment. One need only recall that Central was first created as an object of emulation -- a school that was deliberately higher, better and more expensive than the others. It was only by doing so that the board managed to gain and keep control over the schools at the lower levels of the system. And consider the leverage which Central gave the board: a small investment in faculty salaries at the high school provided useful and visible results while the same money invested in the average teacher would have disappeared with hardly a trace.

One important implication of this analysis however is that the preeminence of Central's professors was likely to decline when first the manual training schools and later the regional high schools undermined its monopoly of the top rank. When Central became one among many high schools in the city, its professors were likely to be seen as men playing an increasingly commonplace role.

Next I want to examine the part played by sexual stratification in creating the great salary gap between

Central professors and the average teacher in the system. I will be advancing an argument similar to the one used in discussing the effects of school rank: namely that as men in an almost entirely female school system, the professors had great prominence and significant leverage. Of course feminization of the teaching force was by no means unique to Philadelphia but was a general characteristic of American school systems in the nineteenth century. Nationally 61.2% of the teachers in the United States in 1870 were women, with the proportion rising to 70.0% in 1900 and 85.9% in 1920. However, as Table 2.12 shows, the Philadelphia school board pursued feminization much earlier that other boards and carried it to a greater extreme. Already by 1840 85% of Philadelphia's teachers were women, a level not reached until 80 years later in the nation as a whole. In the 1870s the number of male teachers actually declined in the face of rising enrollments and in the 1880s the proportion of men had dropped to the astonishing level of 4%. Large urban districts in general carried out feminization more aggressively than others, as shown in Table 2.13, but even in this company Philadelphia had advanced the farthest in this direction. Indeed this process could not have gone much farther and still left boys' grammar and high schools under male supervision.

Under these conditions the school board could easily afford to pay male grammar school principals 3.3 times as much as the average teacher and high school professors four times as much. After all, in 1880 the total number of male teachers was only 77, and the professors accounted for only 16 of these. Here then is the solution to the problem of why Philadelphia had such extraordinarily large salary differences separating its teachers: the board was able to pay its higher level male teachers at a relatively generous rate because their numbers were too small to have more than a minimal effect on total costs. And Central professors, as the only men teaching at the only male high school, were twice blessed. Given this situation, it is hardly surprising to discover that Philadelphia spent markedly less on each teacher overall than any other large urban school district. The average teacher salaries in these districts for 1879 are shown in Table 2.14. Therefore with what the Philadelphia board saved by having so many women teachers and so many lower level schools, it could easily subsidize a few male high school professors and grammar school principals. The key again is in the numbers. A very wide range of pay rates was possible only because the large majority of teachers was clustered at the low end of this range while the higher level male teachers were located far out on the tail of the distribution curve, more than two standard deviations away from the mean. Central professors were the highest paid teachers in the system by far but as only 0.8% of the city's teachers they were merely outliers in the overall distribution of salaries.

Such broad salary differentials were luxuries which the district could afford only as long as both the number of high schools and the number of men remained very small, as long as the pay of women could be kept very low and as long as Central remained a useful means of controlling the educational marketplace. But beginning dramatically in 1879, all of these factors began to change and as a consequence in the second period the once unchallengeably superior status of Central professors started into a dangerous slide.

One final note on the sexual stratification of teachers: Since the elevated position of the male high school teacher depended in part on his relative scarcity, we need to ask why the proportion of women teachers grew in the nineteenth century and why it grew earlier and faster in Philadelphia. Church suggests three reasons for the national trend: culturally, women were seen as better suited to the nurture of young minds; demographically, unmarried women were abundant in the east because of westward migration of males; and economically, women were cheaper.(62) The Philadelphia school boards chose to exploit this last advantage to the maximum by pushing feminization past the 96% mark, which permitted them to pay the few remaining men quite will and still maintain a lower average pay that other districts.

Tyack however sees the growing sexual imbalance in teaching as derived from another source as well, namely the concern about control within the new system structures.

> Hierarchical organization of schools and the male chauvinism of the larger society fit as hand to glove. The system required subordination; women were generally subordinate to men; the employment of women as teachers thus augmented the authority of the largely male administrative leadership.(63)

This observation is especially appropriate in the Philadelphia situation. For compared with other cities, Philadelphia's school system had a peculiarly weak formal control structure throughout the nineteenth century. Although the common school system in the city was established in 1836, there was not even a nascent administrative staff until the superintendent's office was founded in 1883, and the city-wide school board did not gain legal authority over local schools until 1905.

In light of this, two other unusual characteristics of Philadelphia schools are easier to interpret -- that it formed a high school earlier and on a grander scale than most other cities and that it feminized its teaching force earlier and more thoroughly than most as well. I have already discussed how school boards used Central High School as a market mechanism for gaining control of the system by making it so attractive that students competed for admission and thereby pressured lower schools to comply with the high school's standards. For a school board trying to control a district without the direct authority to do so, such an indirect expedient was one of the few alternatives open.

Another was feminization. The central board certainly did encourage this movement in the middle of the century and took no steps to counter it until finally establishing Central's School of Pedagogy for men in 1891 -- with an entering class of six. The point however is not that hiring more women teachers gave the controllers more control over the schools, since actual hiring was done by ward boards and it was they who reaped whatever benefits accrued from a more subordinate work force.

Instead of viewing feminization as a lever for gaining control of the system for the board, I see it as an expression of the central board's over-riding concern throughout the nineteenth century with establishing and preserving hierarchy in all its manifestations within the system. It is perhaps understandable that a system which went through 50 years of indirect bureaucratization before it achieved even the beginning of a formal bureaucracy was a system obsessed with the forms of hierarchy in the absence of the real thing. Thus perhaps many peculiar elements of the Philadelphia school system -- its four tiers of schools with Central High School at the top in lonely splendor, its 12 grades for the eight elementary years and its overwhelmingly female corps of teachers -- are explained in part by the central board's ideological commitment to the principle of stratification.

The years from 1838 to 1878 were characterized initially by very sharp pay differences which later stabilized at a somewhat diminished level. The second period, running from 1879 to 1912, saw dramatic changes in pay scales which led in the direction of equalizing both differences due to sex and differences due to level. In 1879 Edward Steel took office as president of the school board and immediately proposed a full agenda of reforms, including a plan for reducing (with the intent of eventually eliminating) the system's sex-based pay differential. Henceforth all salaries other than those at the high school would be computed as the sum of two figures: one based on a person's position, school level and sex (the old method) and another based on seniority (the new method) which cut across the other categories and reduced their impact. The net effect was to raise the pay of female grammar school principals and lower the pay of their male counterparts. Even though high schools were exempt from the new formula, similar effects were brought about there as well -- with Girls' High pay going up and Central pay going down. The hint that this might portend equalization of more than the sexes came from the fact that the male principal of Girls' High received a raise while Central's president took a cut.

In 1885 the first manual training school opened in Philadelphia. After five years of apparent uncertainty about where to peg the salaries for this school, pay levels for its all-male teaching force stabilized for the next decade at 80% of the pay of a Central professor while the principal earned 75% of a Central president's salary. The salary decision about the manual training school can be taken as indicative of a more general assessment that the new school was a lower level institution than Central, with teachers paid more like grammar school masters than professors. At this stage anyway the newcomers seemed to pose no threat to the position of the high school professor.

But the women kept gaining. In 1895, just two years after the principal of Girls' High School finally attained the pay level of Central's president, teachers at Girls' at last reached a point of parity with female grammar school principals. This put them at one-half the pay of Central professors, a fraction that rose to two-thirds by 1908. The gap between the two high school faculties had narrowed considerably since the earlier period when this figure never rose above one-third. Meanwhile the male grammar school principals, who had made significant relative gains on the professors in the first period, never managed to surpass the 83% level from 1856 (when they first approached it) to 1913. One important conclusion that can be drawn from the stability of this relationship is that since the financial incentives for male principals to seek promotion to Central High School were essentially unchanged during these years, the decline in the proportion of such men on the Central faculty after 1880 must be attributed to other causes. As I pointed out before, the enormous attractiveness of a professorship at Central to grammar school principals in the earlier period can be accounted for by its relatively high level of pay and prestige. But the decline in the percentage of public school men on the faculty from 63% in 1880 to only 27% in 1900 in the face of the job's continued apparent appeal to such men lends support to the view I expressed in the previous section. Fewer experienced public school teachers joined the faculty after 1880 not because they lost interest in doing so but because they were largely denied access by the new policy favoring the college educated. Thus it was differential incentives that helped form the character of the mid-century faculty, but it was credentialism that transformed that faculty by 1900.

The edge formerly held by Central professors over manual training teachers evaporated in 1901 and by 1908 annual reports listed a single pay schedule for Central, Girls' High, Normal and manual training schools. The male-female differential was still maintained (at a 3:2 ratio), but the differences between schools at both the principal and teacher levels disappeared. Central's president and professors were now distinguished from the principals and teachers at other high schools in name and sex only.

The third period of salary developments extended from 1913 to 1939 and witnessed elimination of the final advantages enjoyed by men over women and and by higher schools over lower schools. In 1913 a major change took place in grammar school pay alignments. Before this point board rules had encouraged teachers to qualify for the position of supervising principal (an administrator rather than a teacher) by offering a $200 bonus above the pay of a regular principal. But this year tables were turned. The supervising principal was now defined as the normative case and given a pay raise while the teaching principal was lumped together with regular teachers and given a drastic pay cut. In addition for the first time male and female principals were assigned equal salaries. Their new rate was set at the level of a high school professor's pay, and only one year later pay for grammar school principals edged past the professors in what turned out to a permanent reversal of the longstanding pay differential between the two. Finally the schedules this year abandoned for the first time the time-honored designation of Central's faculty members as professors and referred instead simply to male and female high school teachers.

In order to understand the significance of these changes we must recall that they occurred at the high point of Superintendent Brumbaugh's campaign to reduce Central from a special to an ordinary status within the school system. In 1912 he had restructured the system so that Central became simply one among many comprehensive regional high schools, and he then moved to cancel a number of its traditional privileges such as catalogues and annual reports. By 1914 Central was in open retreat from its former position of dominance and the pay changes that year reflected the new status of both the school and its professors.

These pay changes can best be interpreted by examining them in terms of the three criteria for salary stratification identified earlier -- sex, position and school rank. First of all now that male grammar school principals were rated above Central professors (64), it appears that the effects of positional differences within schools suddenly outweighed the effects of rank between schools, a major switch. At the same time that the role of supervising principal was being defined as both distinct from and superior to the role of teacher, the vertical distance between Central High School and the grammar schools was being diminished. The result was that professors at Central were becoming seen less as representatives of a once-dominant school and more as members of a now-subordinate occupational group.

The criteria for stratification were restructured in another way as well. Now that female grammar school principals were rated equal to their male counterparts and superior to Central professors, it was becoming clear that the advantage the professors had once enjoyed as men was vanishing in much the same way as their former institutional edge, leaving them in a position of growing equality with other teachers. Therefore the third period was characterized by the ascendance of position as a principle of stratification among Philadelphia educators and the corresponding equalization of differences according to sex and school rank. By contrast in the first and (to a lesser extent) second periods position tended to be overwhelmed by the effects of the other two, producing a situation where a Central High School professor could earn three times as much as a female grammar school principal and five times as much as a Girls' High School teacher. The development of a new structure of occupational stratification was brought to completion in 1920 when the board finally abandoned all sexual distinctions in job titles and pay. The pay differences that were retained were a function of position (a grammar school principal earned twice as much as one of his or her teachers) and to a lesser extent school level (a high school teacher earned 80% more than a grammar school teacher's pay). Perhaps most important for Central professors however was the fact that they were from this time onward paid at exactly the same rate as the male and female teachers of other high schools. Their last advantage was gone.

This account of the occupational evolution of Central's professors provokes two comments about points raised in earlier sections. First the major series of changes in professorial status took place during the period after 1905 when the city's superintendents were both eager and able to press for a thoroughgoing rationalization of the school system. At the broadest level this process created a setting in which the unique status and special privileges of Central High School appeared increasingly inimical to the efficient administration of the district, and thus Central was quickly inducted into a standardized position within the system. At the occupational level, the high school professors' special sex-based and school-based privileges likewise appeared as offensive to a well rationalized policy of personnel management and were thus either eliminated or generalized.

A second comment I wish to make focuses on the connection between the declining status of the Central professor and the changing content of faculty meetings. It is far from coincidental that the time of sharpest status loss (1913-1914) was also the point when the faculty began spending an increasing share of its time in meetings discussing purely occupational issues. It should be recalled that in the era of collegial governance faculty meetings were devoted to managing the daily affairs of the school and debating educational policy. But by the second decade of the twentieth century those issues were most often dealt with by the president, department heads, committees and the superintendent's office. Having lost their earlier power, professors eventually stopped trying to govern the school and turned instead to the examination of their own status needs.

During the teens, twenties and thirties, two of the topics most frequently discussed in faculty meetings were the agitation for higher teacher salaries and the activities of various professional organizations. Although Philadelphia teachers were not organized into a union until 1941, these meetings have much of the flavor of union gatherings. Discussion focused on political and organizational tactics, on the importance of membership in various lobbying groups and on the assessment of dues. At various times the faculty as a whole belonged and appointed representatives to the Association of Colleges and Preparatory Schools of the Middle States and Maryland, High School Men's Association, Pennsylvania Teachers' Association and Philadelphia Teachers' Association.

These organizations represented the new collegiality of the Central faculty. Unlike the old collegiality whose focus on governance reflected the dominant position of the earlier professors, the new form aimed at the issues of security and salary, reflecting the subordinated status of professors in later years. Once a political body, the faculty had become more like a bargaining unit.

Conclusion

The three stages that marked the decline in status of Central High School's professors correspond closely to the three developmental stages of the Philadelphia school system that were identified in chapter one. The professors enjoyed their greatest advantage during the era when the system was structured by market forces, they began to lose this edge when the bureaucratizers started challenging the market structure and they finally fell into subordinate status at the moment when the advance of bureaucracy was complete. This correspondence between teacher status and system organization is best understood by the comparing the three principles for stratifying teachers with the characteristics of the two competing organizational types.

Teachers from the highest ranking school -- Central -- earned considerably more than those from lower ranking schools in the early period, with the differences declining during the latter two periods. This reduction in the pay differential due to school rank simply reflected Central's gradual loss in rank in the face of bureaucratic advances. The effectiveness of the emulative control structure required that the high school have a status so elevated that students and teachers alike would have a powerful incentive to compete for positions there. But as the incipient bureaucrats began centering control of the school system in the superintendent's office, the elevated position of the high school came to be seen as a threat. Thus the elimination of Central's pay advantage could be justified as part of the symbolic subordination of the school.

The wide sex differential in teacher pay can also be seen in part as a reflection of the extreme forms of hierarchy generated within the school system by the market structure of schooling. Of course, since so few of the teachers were men, paying them more (or the women less) was a fiscally painless act. But while the fiscal consequences of stratifying teacher pay by sex were the same for both systems of organization, this form of stratification was eliminated by the bureaucratizers. Thus the devotion to the principle of half pay for women teachers during the era of emulative control must be interpreted as originating in ideological more than monetary concerns. Society was seen as naturally hierarchical and women were seen as naturally subordinate (especially in the working world). Next to these principles, position paled into insignificance.

However position is the etymological root of bureaucracy. A bureaucracy can be defined as a hierarchy of offices -- bureaus -- which means that the focus in this form of organization is on the relationship between positions rather than people. Therefore as bureaucracy began to take hold in the Philadelphia school system, the principle of position became ascendant in the stratification of teachers and sex differentials fell into decline. From the bureaucratic perspective, the previous ideological attachment to sex differentials was irrational, since people in equal positions should receive equal pay, regardless of the organizationally irrelevant fact of sex. The process of bureaucratization in the Philadelphia school system leveled the pre-existing hierarchies of schools and sexes and installed in their place a hierarchy of positions.

TABLE 2.1

SIZE OF CENTRAL'S STUDENT BODY AND FACULTY, 1838-1939

Year	Students enrolled(a)	No. of profs(b)	Year	Students enrolled(a)	No. of profs(b)
1838	63	4	1881	480	16
1839	101	6	1882	523	16
1840	199	7	1883	559	16
1841	246	7	1884	576	16
1842	332	10	1885	619	16
1843	383	10	1886	610	16
1844	389	9	1887	623	15
1845	408	10	1888	598	16
1846	452	11	1889	548	18
1847	505	10	1890	561	21
1848	505	10	1891	609	22
1849	511	10	1892	606	22
1850	485	11	1893	631	23
1851	502	12	1894	706	28
1852	514	11	1895	773	33
1853	520	15	1896	865	38
1854	556	16	1897	1,044	43
1855	601	15	1898	1,164	45
1856	576	14	1899	1,228	46
1857	517	13	1900	1,235	54
1858	532	13	1901	1,319	54
1859	556	14	1902	1,366	54
1860	540	14	1903	1,438	58
1861	536	14	1904	1,474	62
1862	525	14	1905	1,729	72
1863	470	14	1906	1,942	75
1864	528	14	1907	1,987	76
1865	426	14	1908	1,905	75
1866	412	14	1909	1,943	86
1867	471	14	1910	2,301	84
1868	453	15	1911	2,282	84
1869	452	15	1912	2,166	89
1870	489	15	1913	2,285	108
1871	533	15	1914	2,481	105
1872	572	16	1915	2,560	107
1873	542	16	1916	2,927	82
1874	570	16	1917	2,074	83
1875	611	16	1918	2,186	81
1876	601	16	1919	1,956	96
1877	644	16	1920	2,802	106
1878	516	16	1921	2,070	114
1879	462	16	1922	3,605	136
1880	495	16	1923	4,110	147

TABLE 2.1 (CONT.)

Year	Students enrolled	No. of professors
1924	NA	143
1925	3,650	142
1926	3,678	141
1927	NA	128
1928	NA	NA
1929	NA	NA
1930	NA	114
1931	3,056	122
1932	NA	127
1933	NA	119
1934	NA	110
1935	NA	119
1936	NA	123
1937	NA	106
1938	NA	NA
1939	NA	42

Source: Philadelphia Board of Public Education, Annual Reports, 1838 to 1939.

(a) Enrollment at start of year.

(b) Includes all those who taught at the school and is not limited to those with the title of professor.

TABLE 2.2

AVERAGE AGE AND TENURE OF CENTRAL PROFESSORS(a)

	1840	1850	1860	1870	1880	1890	1900	Average/ faculty
Age in sample year	42.9	37.8	40.2	38.9	47.0	41.6	35.9	40.6
Age at start	41.6	31.1	30.2	30.8	36.9	29.8	28.3	32.7
Years at Central (total)	10.4	19.2	19.9	25.0	30.3	28.2	24.0	23.0
Age at leaving	52.0	50.3	50.1	55.8	67.2	58.0	52.3	55.1
Years at Central (as of sample yr)	1.3	6.7	8.0	8.1	10.1	11.8	7.6	7.7
Total professors	8	10	15	16	16	20	55	

Source: Franklin S. Edmonds, History of the Central High School of Philadelphia (Philadelphia: Lippincott, 1902), pp. 319-349. See text for discussion of sampling method.

(a) See footnote 39.

TABLE 2.3

EDUCATION LEVEL OF CENTRAL PROFESSORS

(% of total professors for each year)

	1840		1850		1860		1870		1880		1890		1900		Ave/ fac
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	%
Attended Central(a)	0	0	2	20	7	47	8	50	7	44	11	55	25	45	44
Attended college(a)	3	38	4	40	6	40	8	50	9	56	12	60	46	84	53
Non-college professional training	3	38	1	10	1	7	0	0	0	0	0	0	0	0	8
Total professors	8	100	10	100	15	100	16	100	16	100	20	100	55	100	

Source: Edmonds, History, pp.319-349.

(a) These two categories are not mutually exclusive.

TABLE 2.4

COLLEGE DEGREES HELD BY CENTRAL PROFESSORS(a)

(% of total professors for each year)

	1840		1850		1860		1870		1880		1890		1900		Ave/ fac
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	%
Liberal arts (BA, MA, PHB)	1	13	1	10	1	7	0	0	1	6	2	10	15	27	10
Ph.D.	0	0	0	0	0	0	0	0	0	0	0	0	10	18	3
Science (BS, MS, SCD)	0	0	0	0	0	0	1	6	0	0	3	15	8	15	5
M.D.	1	13	2	20	3	20	5	31	5	31	4	20	3	5	20
Other	1	13	1	10	1	7	0	0	1	6	0	0	1	2	5
Total college graduates	3	38	4	40	5	33	6	38	7	44	9	45	37	67	44
Total professors	8	100	10	100	15	100	16	100	16	100	20	100	55	100	

Source: Edmonds, History, pp.319-349.

(a) Honorary degrees are excluded if identified as such.

TABLE 2.5

CENTRAL PROFESSORS WITH PUBLICATIONS, BY TYPE

(% of total professors for each year)

	1840		1850		1860		1870		1880		1890		1900		Ave/ fac
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	%
Textbooks	4	50	5	50	3	20	2	13	4	25	3	15	6	11	26
Research in discipline	0	0	0	0	1	7	3	19	3	19	6	30	12	22	14
General scholar-	3	38	0	0	0	0	0	0	0	0	0	0	0	0	5
Other	0	0	0	0	0	0	0	0	0	0	1	5	1	2	1
Total with publications	7	88	5	50	4	27	5	31	7	44	10	50	19	35	46
Total professors	8	100	10	100	15	100	16	100	16	100	20	100	55	100	

Source: Edmonds, History, pp. 319-349.

TABLE 2.6

PRIOR OCCUPATIONS OF CENTRAL PROFESSORS

(% of total professors for each year)

	1840		1850		1860		1870		1880		1890		1900		Ave/ fac
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	%
Teachers(a)															
Public	0	0	0	0	2	13	3	19	5	31	3	15	10	18	14
Private	1	13	2	20	1	7	2	13	1	6	1	5	5	9	10
College	0	0	0	0	1	7	1	6	2	12	4	20	7	13	9
Total	1	13	2	20	4	27	6	38	8	50	8	40	22	40	33
Principals(a)															
Public	0	0	1	10	3	20	5	31	5	31	6	30	5	9	19
Private	3	38	0	0	1	7	0	0	0	0	0	0	1	2	7
Total	3	38	1	10	4	27	5	31	5	31	6	30	6	11	25
Total educators	4	50	3	30	8	53	11	69	13	81	14	70	28	51	58
Total public schoolmen	0	0	1	10	5	33	8	50	10	63	9	45	15	27	33

Source: Edmonds, History, pp. 319-149.

TABLE 2.7

CENTRAL PROFESSORS WITH M.D., BY YEAR

Year	Professors with M.D.s	Profs with any degree	Total no. of profs
1840	1	3	8
1850	2	4	10
1860	3	5	15
1870	5	6	16
1880	5	7	16
1890	4	9	20
1900	3	37	55

Source: Table 2.4.

TABLE 2.8

SALARIES OF CENTRAL PROFESSORS COMPARED WITH OTHER PHILADELPHIA EDUCATORS(a)

(% of Central professors' salary for each year)

	Central High			Girls' High				Male gram		Fem gram	
Year	prof	president		principal		teacher		schl prin		schl prin	
	$	$	%	$	%	$	%	$	%	$	%
1841		2000									
1842	1350	1600	119					900	67	450	33
1843	"	"	"					"	"	"	"
1844	"	"	"					"	"	"	"
1845	"	"	"					"	"	"	"
1846	"	"	"					1000	74	500	37
1847	"	"	"	1000	74	250	19	"	"	"	"
1848	"	"	"	"	"	300	22	"	"	"	"
1849	"	"	"	"	"	"	"	"	"	"	"
1850	1500	2000	133	1200	80	"	20	"	67	"	33
1851	"	"	"	"	"	"	"	"	"	"	"
1852	"	"	"	"	"	"	"	"	"	"	"
1853	1650	2200	133	1350	82	380	23	1200	73	600	36
1854	"	"	"	"	"	"	"	"	"	"	"
1855	"	"	"	1650	100	500	30	"	"	"	"
1856	1500	2000	133	1500	100	"	33	"	80	"	40
1857	"	"	"	"	"	"	"	"	"	"	"
1858	"	"	"	"	"	"	"	"	"	"	"
1859	"	"	"	"	"	"	"	"	"	"	"
1860	"	"	"	"	"	"	"	"	"	"	"
1861	"	"	"	"	"	"	"	"	"	"	"
1862	"	"	"	"	"	"	"	"	"	"	"

TABLE 2.8 (cont.)

Year	Central High			Girls' High				Male gram		Fem gram		Manual training			
	prof	president		principal		teacher		schl prin		schl prin		principal		teacher	
	$	$	%	$	%	$	%	$	%	$	%	$	%	$	%
1863	1800	2250	125	1800	100	600	33	1500	83	750	42				
1864	"	"	"	"	"	"	"	"	"	"	"				
1865	"	"	"	"	"	"	"	"	"	"	"				
1866	"	"	"	"	"	"	"	"	"	"	"				
1867	1980	2475	125	1980	100	660	33	1650	83	825	42				
1868	"	"	"	"	"	"	"	"	"	"	"				
1869	"	"	"	"	"	"	"	"	"	"	"				
1870	"	"	"	"	"	"	"	"	"	"	"				
1871	2178	2722	125	2178	100	735	34	1815	83	907.50	42				
1872	"	"	"	"	"	"	"	"	"	"	"				
1873	"	"	"	"	"	"	"	"	"	"	"				
1874	"	"	"	"	"	"	"	"	"	"	"				
1875	"	"	"	"	"	"	"	"	"	"	"				
1876	"	"	"	"	"	"	"	"	"	"	"				
1877	2069	2586	125	2069	100	698	34	1724	83	862	42				
1878	"	"	"	"	"	"	"	"	"	"	"				
1879	1925	2400	125	2200	114	825(b)	43	1595	83	1000	52				
1880	"	"	"	"	"	"	"	"	"	"	"				
1881	"	"	"	"	"	"	"	"	"	"	"				
1882	"	"	"	"	"	"	"	"	"	"	"				
1883	"	"	"	"	"	"	"	" (c)	" (c)	"	"				
1884	"	"	"	"	"	"	"	"	"	"	"				
1885	"	"	"	"	"	"	"	"	"	"	"				
1886	1975	2450	124	2450	124	875	44	1645	83	1050	53	2450	124	1975	100
1887	2178	2715	125	2450	112	"	40	1815	83	"	48	"	112	"	91
1888	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
1889	"	4000	184	2700	124	1025	47	"	"	1200	55	2580	118	2067	95
1890	"	"	"	3000	138	1100	51	"	"	"	"	2700	124	2178	100
1891	2500	"	160	"	120	"	44	"	73	"	48	"	108	"	87
1892	"	"	"	3050	122	1150	46	1865	75	1250	50	3000	120	2000	80

TABLE 2.8 (cont.)

Year	Central High prof $	Central High president $	%	Girls' High(d) principal $	%	Girls' High(d) teacher $	%	Male gram schl prin $	%	Fem gram schl prin $	%	Manual training principal $	%	Manual training teacher $	%
1893	2500	4000	160	4000	160	1150	46	1865	75	1250	50	3000	120	2000	80
1894	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
1895	"	"	"	"	"	1250	50	"	"	"	"	"	"	"	"
1896	" (e)	"	"	"	"	"	"	"	"	"	"	"	"	"	"
1897	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
1898	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
1899	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
1900	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
1901	"	"	"	"	"	"	"	"	"	"	"	3500	140	2500	100
1902	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
1903	"	"	"	"	"	1350	54	2015	81	1400	56	"	"	"	"
1904	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
1905	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
1906	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
1907	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"

Year	Male high sch teachers $	High sch principals $	%	Female high sch teachers $	%	Male gram sch principals $	%	Female gram sch principals $	%	Male gram sch teachers $	%	Female gram sch teachers
1908	2500	4500	180	1650	66	2115	85	1400	56			
1909	"	"	"	"	"	"	"	"	"			
1910	"	"	"	"	"	"	"	"	"			
1911	"	"	"	"	"	"	"	"	"			
1912	"	"	"	"	"	"	"	"	"			

TABLE 2.8 (cont.)

Year	Male high sch teachers	High sch principals		Female high sch teachers		Male(f) gram sch principals		Female(f) gram sch principals		Male gram sch teachers		Female gram sch teachers	
	$	$	%	$	%	$	%	$	%	$	%	$	%
1913	2500	4500	180	1650	66	2500	100	2500	100	1300	52	1000	40
1914	2700	"	167	1750	65	3100	115	3100	115	1400	52	1100	41
1915	"	"	"	"	"	"	"	"	"	"	"	"	"
1916	"	"	"	"	"	"	"	"	"	"	"	"	"
1917	"	"	"	"	"	"	"	"	"	"	"	"	"
1918	"	"	"	"	"	"	"	"	"	"	"	"	"
1919	"	"	"	"	"	"	"	"	"	"	"	"	"

Year	High school teachers	High school principals		Grammar sch supervising principals		Grammar school teachers	
	$	$	%	$	%	$	%
1920	2632	5060	192	3700	141	1800	68
1921	3200	5500	172	4000	125	2000	63
1922	3600	"	153	"	111	"	56
1923	"	"	"	"	"	"	"
1924	"	"	"	"	"	"	"
1925	"	"	"	"	"	"	"
1926	"	"	"	"	"	"	"
1927	"	"	"	"	"	"	"
1928	"	"	"	"	"	"	"
1929	"	"	"	"	"	"	"
1930	"	"	"	"	"	2400	67
1931	"	"	"	4500	125	"	"
1932	"	"	"	"	"	"	"
1933	"	"	"	"	"	"	"
1934	"	"	"	"	"	"	"

TABLE 2.8 (cont.)

Source: Philadelphia Board of Public Education, Annual Reports, 1838 to 1940.

(a) Included under the heading of Central professors are all those who taught at the school, whether or not they had that title. Pay levels shown are all maximums -- the top pay permitted for each category of educator. See text for discussion of the relative merits of maximum vs. average pay measures.

(b) Starting this year there were several men teaching at Girls' High at more advanced pay levels than the women. The figures in this column are the maximum pay levels for female teachers only.

(c) In this year the board began a policy of paying a $200 bonus to supervising principals above the regular principal rate shown here.

(d) The figures for prior years are for Girls' High and Normal School. But the two segments separated this year and the figures given here are for Girls' High School alone.

(e) Beginning in 1896 Central had a multi-level pay scale. The new maximum rates were: department head, $3,000; professor, $2,500; assistant, $1,800; and instructor, $1,250. In order to be consistent and because they were the largest group numerically, I have shown only the pay for professors.

(f) Starting in 1913 the principal rates on the table are for supervising principals only, for that is the year that the board made them the normative case.

TABLE 2.9

PAY LEVELS OF SELECTED PHILADELPHIA EDUCATORS
SHOWN AS MULTIPLES OF AVERAGE TEACHER PAY -- 1879

	Pay level	Multiple of ave. teacher pay level
Average pay for all city teachers	$484	1.0
Maximum pay levels for:		
Central professor	1925	4.0
Central president	2400	5.0
Girls' HS principal	2200	4.5
Girls' HS teacher	825	1.7
Male grammar school teacher	1595	3.3
Female grammar school teacher	1000	2.1

Sources: Tables 2.8 and 2.14

TABLE 2.10

PHILADELPHIA'S EDUCATIONAL PYRAMID, 1880

	Students		Schools	
	No.	%	No.	%
High schools	1,470	1.4	2	0.4
Grammar schools	15,371	14.6	65	13.8
Secondary schools	25,936	24.6	134	28.5
Primary schools	55,139	52.3	238	50.5
Consolidated schls (pri, sec & gr)	7,506	7.1	32	6.8
Total	105,422	100.0	471	100.0

Source: Philadelphia Board of Public Education, Annual Report, 1880.

TABLE 2.11

HIGH SCHOOL ENROLLMENT IN URBAN SCHOOL DISTRICTS, 1880

(% of total enrollment)

School districts(a)	High school enrollment	Total public school enrollment(b)	%
All US public schools	110,289	9,868,000	1.1
Philadelphia	1,470	105,422	1.4
St. Louis	1,122	51,241	2.2
Jersey City	557	22,776	2.4
Chicago	1,460	59,562	2.5
San Francisco	1,232	36,163	3.4
Cincinnati	1,305	33,654	3.9
Boston	1,854	44,731	4.1
Cleveland	1,119	24,262	4.6

Sources: Commissioner of Education, Report for the Year 1880 (Washington, D.C.: Bureau of Education, 1881), Table II; Ellwood P. Cubberly, Public Education in the United States, rev. ed. (Boston: Houghton-Mifflin, 1934), p. 627; and U.S. Bureau of the Census, Historical Statistics of the United States, Colonial Times to 1970 (Washington, D.C.: 1975), Table H412-32.

(a) The eight school districts shown here are all of those with more than 20,000 in total enrollment who were listed in the 1880 Commissioner's report with a separate figure for high school students. New York was left out because the high school total included corporate schools.

(b) Day enrollment only.

TABLE 2.12

PROPORTION OF FEMALE PUBLIC SCHOOL TEACHERS IN PHILADELPHIA AND THE U.S.

	Philadelphia teachers				U.S.
	Male	Female	Total	%	%
1835	15	17	32	53.1	
1840	22	125	147	85.0	
1845	82	472	554	85.2	
1850	81	646	727	88.9	
1855	81	854	935	91.3	
1860	81	981	1,062	92.4	
1865	84	1,194	1,278	93.4	
1870	80	1,459	1,539	94.8	61.2
1875	77	1,801	1,878	95.9	
1880	77	1,998	2,075	96.3	57.1
1885	88	2,195	2,283	96.1	
1890	105	2,589	2,694	96.1	65.4
1900					70.0
1910					79.0
1920				87.0(a)	85.9

Sources: William W. Cutler III and Richard Fishbane, "An Occupation in Transition: An Analysis of Public School Teachers in Philadelphia in the Mid Nineteenth Century," Temple University, n.d. (typewritten), Table I; U.S. Bureau of the Census, *Historical Statistics of the United States, Colonial Times to 1970* (Washington, D.C.: 1975), Part I, Table H520-530.

(a) This is a figure for 1921 taken from the School Survey of that year, Pennsylvania State Department of Instruction, Report of the Survey of the Public Schools of Philadelphia, vol. 3 (Philadelphia: Public Education and Child Labor Association of Pennsylvania, 1922), p. 169.

TABLE 2.13

PROPORTION OF FEMALE TEACHERS IN LARGE URBAN SCHOOL SYSTEMS, 1880

	%
Philadelphia	96.3
Chicago	96.2
Washington, D.C.	93.8
San Francisco	92.6
Boston	88.6
New York	86.6
Cincinnati	81.9

Source: Commissioner of Education, *Report for the Year 1880* (Washington, D.C.: Bureau of Education, 1881), Table II.

TABLE 2.14

AVERAGE TEACHER SALARIES FOR LARGE URBAN SCHOOL DISTRICTS, 1879

Philadelphia	$486.14
Washington, D.C.	654.00
Chicago	700.00
New York	814.17
Cincinnati	838.22
Boston	978.35
San Francisco	990.64

Source: Richard B. Fishbane, "'The Shallow Boast of Cheapness': Public School Teaching as a Profession in Philadelphia, 1865-1890," *The Pennsylvania Magazine of History and Biography* 103 (Jan. 1979), pp. 66-84.

FOOTNOTES

Minutes = Minutes of Central High School faculty meetings

AR = Annual Reports of the Philadelphia Board of Public Education (Controllers)

1. Alexander D. Bache, Report to the Controllers of the Public Schools on the Reorganization of the Central High School of Philadelphia. Dec. 10, 1839. pp. 33-4.

2. George V. Fagan, "Alexander Dallas Bache, Educator," Barnwell Bulletin 18:75 (April 1941), p. 30.

3. Board of Controllers of the Public Schools of Philadelphia, Report of the Committee on the Central High School Adopted by the Board of Controllers of the Public Schools of Philadelphia, Jan. 2, 1862. Philadelphia: Board of Controllers, 1862.

4. Minutes I 2/7/1845.

5. Ibid., 4/9/1851 to 4/26/1851.

6. Ibid., 4/26/1851.

7. Board of Controllers of the Public Schools of Philadelphia, Report of the Special Committee on Communications from Messrs. Vogdes and Gerard Together with the Testimony (Philadelphia: Board of Controllers, 1862) p. 16.

8. Ibid., p. 111.

9. There is a more direct connection between Bache and Maguire than is revealed through this parallel. While he was Central's principal Bache headed a committee examining candidates for the principalship of Hancock Grammar School and strongly urged that Maguire be hired. He was, and he remained in that post until moving on to the high school. Ibid., p. 119.

10. Ibid. passim.

11. Ibid.; and Board of Controllers of the Public Schools of Philadelphia, Reports of the Committee on Central High School, and the Special Committee Appointed to Investigate all the Departments of the High School

(Philadelphia: Board of Controllers, 1866), passim.

12. *Reports of the Committee on Central High School*, 1866, passim.

13. Maguire's successor, Riché, worked hard at not being an easy target for potential opponents, and he apparently learned from the hearings that one simple way of avoiding trouble was to read the Bible at assembly with both great regularity and great fervor. For example a former student speaking of Riché at the 1902 dedication ceremony noted, "You will recollect his magnificent reading of the Scriptures. It has never been my pleasure since Riché's time to listen to any man, whether trained to it or not, who could read the Scriptures as Professor Riche could." Franklin S. Edmonds, ed., *Proceedings of the Dedication of the New Buildings of the Central High School of Philadelphia, November 22-26, 1902* (Philadelphia: Lippincott, 1910).

14. George H. Cliff, "The Central High School of Philadelphia: An Historical Sketch," in *The Semi-Centennial Celebration of the Central High School of Philadelphia*,Semi-Centennial Committee (Philadelphia: Semi-Centennial Committee, 1888), p. 28; Edmonds, Dedication, p. 199.

15. *Report of the Committee on the Central High School*, 1862, p. 16.

16. Cliff, "Sketch," p. 28.

17. *Ibid*., p. 29.

18. Minutes III 2/26/1874.

19. Franklin S. Edmonds, *History of the Central High School of Philadelphia* (Philadelphia: Lippincott, 1902), p. 226.

20. *Ibid*., p. 268.

21. Minutes III 4/26/1887.

22. News clipping from school archives, newspaper's name and date unknown.

23. News clipping from school archives, Feb. 6, 1889, newspaper's name unknown.

24. News clipping form school archives, newspaper's

name and date unknown.

25. Minutes III.

26. It is an odd semantic irony that the end of the era of collegial governance was the start of the era of college preparatory curriculum.

27. Minutes II 9/11/1894.

28. William H. Cornog, School of the Republic, 1893-1943 (Philadelphia: Associated Alumni of Central High School, 1952), pp. 59-60.

29. Minutes III.

30. Ibid. IV.

31. Cornog, School of the Republic, p. 60.

32. Minutes V 9/5/1921.

33. Ibid. 12/13/21.

34. Ibid. 1/11/22.

35. "The School as a Formal Organization", in Handbook of Organization, ed. James G. March (Chicago: Rand McNally, 1965), pp. 972-1022.

36. Ibid., pp. 972-8.

37. The notion of incipient bureaucracy is borrowed from Michael B. Katz, Class, Bureaucracy and Schools: The Illusion of Educational Change in America, expanded ed. (NY: Praeger, 1975).

38. The phrase comes from Arthur L. Stinchcombe, "The Social Structure and Organizations", in Handbook of Organization, ed. James G. March (Chicago: Rand McNally, 1965), pp. 142-93.

39. The positions these men held bore a variety of titles: professor, assistant, instructor and occasionally even lecturer. For the purposes of this analysis, all of them will be considered members of the faculty, and for simplicity all will be referred to generically as professors.

40. The extreme example is Zephaniah Hopper who taught at Central from 1854 to 1913, a total of 59 years. He was

89 when he retired.

41. In Table 2.6 I have divided educators into teachers and principals, but the criteria for these categories are a bit vague and the categories themselves had different meanings at different times. At mid-century a grammar school principal was the principal teacher of the school with charge over several assistant teachers. Thus when Edmonds uses the identifiers "teacher" or "taught in" in his mini-biographies, we are left in doubt about which rank of teacher the individual occupied. My response to this situation was to count as principals only those specifically named as such and to call all other teachers. This undoubtedly understates the actual number of principals in the mid-century samples, and as a result the figures for total educators and total public school educators are more generally reliable than those which try to distinguish principals from assistants. This generalization also holds true in 1900, where definitions change but fuzziness persists. The school board was encouraging the rise of supervising (non-teaching) principals in competition with the principal teacher in the 1880s and 1890s (they offered a $200 bonus) and thus a man identified as a principal could have been either an administrator of a head teacher. For this reason comparisons between the middle and the end of the century are probably most appropriately made using the total educator figures.

42. According to Edmonds, History, p. 184.

43. Ibid., p. 206.

44. Alumni status had no effect on faculty factions either. During the Maguire controversy it was date of hiring alone which determined sides. Ten professors opposed the principal: half were alumni but all were hired before 1859 (Maguire's first year). Six professors supported or were neutral toward the principal: four were alumni but all six were hired during Maguire's term. Of the four who were not rehired in the 1866 faculty reshuffle, two were alumni.

45. AR 1859, p. 123 ff.

46. John Duffy, The Healers: A History of American Medicine (Urbana, Ill: University of Illinois Press, 1976), pp. 228-236.

47. Cornog, School of the Republic, p. 186.

48. Albert Mordell, "Albert Henry Smyth, A Memoir", Barnwell Bulletin, 15:58 (Sept. 1937), p. 16.

49. Ibid., p. 16 and passim.

50. AR 1837, p. 14.

51. Robert Wayne Clark, "The Genesis of Philadelphia High School for Girls" (Ed.D. dissertation, Temple University, 1938).

52. Ibid.

53. General Catalogue of the Central High School of Philadelphia, from 1838 to 1890 (Philadelphia: Board of Public Education, 1890).

54. Richard B. Fishbane, "'The Shallow Boast of Cheapness': Public School Teaching as a Profession in Philadelphia, 1865-1890," The Pennsylvania Magazine of History and Biography, 103 (January 1979), pp. 80-1.

55. William W. Cutler III and Richard Fishbane, "An Occupation in Transition: An Analysis of Public School Teachers in Philadelphia in the Mid-Nineteenth Century," Temple University, n.d. (Typewritten.)

56. The exceptions were Hart (early in his administration) and Thompson who both taught though only to a limited extent.

57. The title professor was reserved for men at the high school level and thus at this period it was monopolized by Central.

58. Robert L. Church and Michael W. Sedlak, Education in the United States: An Interpretative History (NY: Free Press, 1976), p.299.

59. Fishbane, "The Shallow Boast of Cheapness."

60. Another 7% were "consolidated" -- combining primary, secondary and grammar levels in one school.

61. That is, cities which reported a separate figure for high school enrollment to the Commissioner of Education. New York was excluded because its figure included corporate schools.

62. Church, Education in the United States, p. 79.

63. David Tyack, The One Best System (Cambridge: Harvard University Press, 1974), p. 60.

64. I will continue to use the term professor even though it is in an official sense anachronistic at this point. In part this is because the title was retained by Central for internal usage and in part because it allows me to distinguish more clearly between instructors at Central and at other schools (referred to as teachers).

CHAPTER III

SOCIAL CLASS AND MERITOCRACY: STUDENT ENROLLMENT AND STUDENT PERFORMANCE

1. THE IDEAL: THE HIGH SCHOOL AS A MODEL MERITOCRACY

In the preceding chapters I have sought to define the sociological and historical character of the Central High School of Philadelphia from several different perspectives: its role in the development of the school system, its evolving pattern of internal governance, and the changing nature of its professorships and the men who occupied them. The purpose of this chapter is to extend the characterization of the high school one step farther by examining its students. I will be seeking to answer two key questions about them: what kinds of students entered Central High School between 1838 and 1920, and which among them succeeded in graduating?

Central's founders were quite clear in defining the kind of school which they were trying to produce, and a critical element of that definition was their view that this school would be open to everyone with ability. A good example is provided by Thomas Dunlap. Dunlap was president the board of controllers during the period when Philadelphia's common schools were established and Central High School was opened. More than any other individual he was responsible for insuring that the high school became a reality. In a speech delivered at the high school's February, 1851 commencement he vividly presented his vision of the school and its students:

> You have before you this day that Central High School, for whose success its founders... uttered...fond aspirations. Ten years of active operation have passed, and WHAT IS IT?...
>
> ...It is the School of the Republic, -- it is emphatically the School of the People -- founded by the people -- maintained by the people -- educating the people -- controlled by the people -- responsible, under God, to none but the people. Such as the purest spirit of Republican Equality -- such as the truest philanthropy would have it -- such is it. Free to all -- amply sustained -- skillfully organized for its purposed ends...knowing no patron, lay or spiritual -- screened by no chartered privileges -- bound by no eleemosynary endowment -- controlled by no lordly or royal founder -- trammeled by no antiquated usages or effete statutes -- knowing no master but God and the People -- opening its portals alike to the son of a President or a ploughman, a Governor or his groom, a millionaire or a hewer of wood -- treating with equal justice -- rearing with equal fidelity, and crowning with all its honors alike the one and the other, and demanding no passport to its blessings, or to its laurels, save that which the people demands, and forever will demand from all its sons -- INDIVIDUAL, PERSONAL MERIT.
>
> Such, fellow citizens, is your High School.(1)

There are two main elements in Dunlap's vision of Central High School. First, in his view the school was grounded in equal opportunity: it was accessible to everyone without regard to special privilege or ascribed status. Second, he felt that its internal procedures were designed to reward its students for individual merit: success at the school was earned by means of a combination of hard work and native ability. This vision is quintessentially bourgeois. His sentiments are very much in the mainstream of the ideology which arose along with commercial capitalism in the early nineteenth century in United States. This small-producer petty-bourgeois ideology stressed the value of equality of opportunity, ability, industriousness, individualism, and self-discipline. The ideology had no regard for inequality of outcomes: as long as disproportionate shares of wealth, power and honor were earned in an open competition where everyone started on an even footing, then these shares were viewed as just rewards. Thus from this perspective, common schools were not seen as leveling institutions, catering to the lowest common denominator in American society, but as frankly hierarchical structures which "leveled upward" by drawing students toward the prize at the top. In Philadelphia that prize was Central High School, and its drawing power had a potent impact on the schools below it in rank.

Alexander Dallas Bache, another of Central's founders, stressed the hierarchical character of the high school in a speech before its alumni society in 1859. Bache was the man who reorganized the school and led it during its first years.

> It seems to me that public education is like one of those great pyramids of eastern work, broad at the base, and gradually and gracefully tapering to its vertex, the number of its recipients, like the number of stones, decreasing from the base. That it is, in the accomodations needed, like a great ocean from which you pass to a wide and capacious bay,

> thence into a mighty river, thence, mounting towards the source, to a stream. That public education, to be thoroughly useful, should be general, the broad base of the pyramid; the ocean, vast, unlimited, with room and verge enough for all. Circumstances determine that the numbers who frequent the grammar school shall be less than those who pass through the primary, and so onward; the pyramid narrowing, the bay contracting.(2)

In characterizing the pyramid of public education, Dunlap emphasized the breadth of its base while Bache focused on the narrowness of its vertex, but they were discussing the same structure and they spoke from the same ideological position. For both of them Central was the school at the top of the school system, designed for a small number of select students who had managed to swim to the head of the stream. And as was noted earlier (Table 1.2) the students who reached the high school were a very select group indeed. Through most of the nineteenth century Central was the only high school for boys in the city, yet the school's students amounted to no more than 1.1% of the total public school population.

To compress their vision into a single word, Central's founders sought to create a school which would be a model meritocracy -- and their retrospective accounts assert that they succeeded in this endeavor. They felt they had molded an institution which stood at the apex of a hierarchy of merit. Only the most diligent and talented students reached the level where they could enter the high school, and only a fraction of these were deserving of graduation.

The founders' meritocratic goal for Central High School will provide a reference point for the following analysis of the school's students. In developing profiles of the students who entered Central and the ones who graduated, I will be concerned where possible with testing whether this goal was in fact realized in the experiences of students at the school.

2. ADMISSIONS: CLASS AND MERIT

The Sample

The data analyzed in this chapter are for the most part drawn from student records at the high school. Some form of record exists for every student who entered the school from the time it opened its doors in 1838 up to the present. The information for each nineteenth century student consists of a single line in a roll book including such entries as date entered and left, parent's occupation, age, previous school and reason for leaving. After 1900 detailed records are available about each student's high school courses and grades and his progress through elementary school. I drew a sample from these records which includes all students entering from 1838 to 1840; all of those entering in the fall of 1850, 1860, 1870 and 1880; 50% of those entering in the fall of 1890, when class size began to increase sharply; 25% of fall, 1900 entrants; 100% of those entering in the fall of 1910, when a large number of students was needed in order to evaluate the complex record available for that year; and 60% of those entering in the fall of 1920, as class size continued to grow. The families of students from classes entering in 1850 to 1880 and 1900 were then located in census manuscripts and this information was added to each student's file.(3) The sample was weighted by the inverse of the sampling fraction used for each cohort with the result that the weighted dataset includes approximately the same number of students each year as entered the high school that year. All tables shown will be based on weighted data. (See Appendix for a more detailed discussion of sampling and coding procedures.)

Assessing the Merit of Those Admitted

Unfortunately these data are not appropriate for a rigorous evaluation of Dunlap's claim that the high school demanded of its entrants "no passport save...MERIT." Such an evaluation would entail drawing a sample of primary school boys, following each through to the end of his schooling and judging whether those who reached Central were indeed the best students. This last is the most difficult. For an extensive survey of Philadelphia public school records was made preliminary to the research project of which this study is a part, and no student grades were found below the high school level for the period 1838 to 1920. In the absence of a definitive test, such as would be provided by grammar school grades, there are three strategies which I will pursue in an effort to gain partial insight into the merit of Central's students. One, which I will carry out in some detail in the following section, involves examining the degree to which the distribution of social classes among Central students was representative of the city as a whole. A biased distribution would not of course mean that students who attended the high school were necessarily unworthy of this honor, but it could mean that class influenced attendance independent of merit or that class influenced the measure of merit itself.

The second strategy directs attention toward a few variables which indirectly reflect the pre-high-school performance of these students. Data on elementary school grade progression in 1910 and 1920 show that students who skipped grades before entering Central tended to have better than average grades at the school while those who repeated elementary grades had poorer than average grades. As a result it turned out that age of admission was an inverse linear function of elementary grades skipped, since boys who skipped early grades entered at a younger age. Throughout the nineteenth century the younger entrants had the best grades while in high school. The fact that the most meritorious grade school students were also likely to perform well in high school does not mean that the high school necessarily admitted only the best students, but it does imply that there was a certain continuity in the standard for assessing merit between the lower and higher schools.

A third approach is to examine the explicit criteria for admission to the high school. One need only recall that from 1838 to 1900 (with the exception of only nine years) students were admitted on the basis of a rigorous written examination. The exam was carried out under conditions of intense public scrutiny. Central was repeatedly investigated in response to charges of unfair administration of the exam and the principal of Girls' High was fired as the result of such an inquiry. As a defensive measure Central presidents adopted elaborate formal procedures for carrying out the exam in the hope of making their admission choices documentable and thus legitimate. The considerable energy which the high school and school board devoted to maintaining at least the appearance of fairness in choosing Central's students strongly suggests a continuing concern with preserving the school system's hierarchy of merit. Grammar school masters complained about the power exerted over them by the exam, about the appropriateness of particular subjects and texts and questions; but they did not disagree with the high school faculty and the school board that the students who passed it were among the very best in the city.

In a school system that was perceived as a pyramid, Central's admission exam guarded the apex, setting the standards of worth for the whole structure. During the nineteenth century, therefore, students had to prove their merit in remarkably public way in order to gain entrance to the high school. The issue which needs to be resolved is whether social class interfered with the meritocratic character of the selection process.

The Distribution of Social Classes

For purposes of this analysis I am employing a four class scale based on the occupation of the students' family heads. These classes are: proprietary middle class, consisting of those occupational groups which are self-employed, such as proprietors, self-employed craftsmen and professionals; employed middle class, made up of white collar employees, clerks, supervisors and government workers(4); skilled working class; and semiskilled-unskilled working class. Persons with missing or unclassifiable occupations are excluded from the class distribution in this section of the analysis in order to preserve comparability with census data; however they are included as a fifth class level in subsequent multivariate analyses.

Table 3.1 shows the proportional distribution of occupational groups by class at Central High School between 1838 and 1920. Within the self-employed class, proprietors were the largest group, contributing 25.6% of the Central population while manufacturers and master artisans added 15.0% and professionals only 6.4%. The largest share of the employed middle class came from white collar employees with 9.9% of the student body, followed by government workers(3a) with 4.7%, clerks with 3.5% and white collar supervisors with 2.7%.

Since this four-class model is based on occupational titles, the question arises as to whether it constitutes a legitimate class scale or is simply an occupational classification. I wish to argue that it can be seen as a crude but nonetheless useful approximation of a class scale. The reason is that this scheme is based not on work categories but on the social relations of work, particularly the relationship between proprietor and employee. In these terms the classes consist of proprietors and three different grades of employees. Given the absence of systematic data on firm size or personal wealth, it was impossible for me to distinguish the self-employed with no employees (petty bourgeois) from the owner-employer (bourgeois); thus both are included in the proprietary class under the common banner of self employment. (Since the petty bourgeois undoubtedly outnumbered the large scale capitalists, I call this a "middle" class.)

However I was able to distinguish sharply between the self-employed and those who work for someone else. This is a class distinction -- one which cannot be made on the basis of occupational titles alone, especially in the nineteenth century. There existed in that era a large if declining group of master artisans, independent commodity producers who owned their own shops and frequently employed journeymen. The problem is that these men tended to list their occupation according to skill designation rather than status, so that masters and journeymen alike appear on the census as tailors or shoemakers. I dealt with this problem by looking up every skilled worker in a business directory, which lists the proprietors of business establishments in the city; if his name appeared there, I considered him a master artisan and thus included him with the proprietary middle class. The three classes of employees, in turn, are differentiated according to the life chances and cultural orientations associated with the occupations they held. White collar employees on salary enjoyed a special advantage in job security and also usually in pay over wage workers. In addition these employees had a distinctly bourgeois value scheme, which makes it appropriate to locate them in the middle class. The connection between the proprietors and white collar employees is confirmed in this chapter by their shared propensity for seeking a high school education for their sons. At the same time, skilled workers received better pay and security than other manual workers, and they form a culturally and behaviorally distinctive group within the working class.(5)

The meaningfulness of these class groupings can be empirically validated in several ways. First, where property data exists (in the cases of students linked to the 1860 and 1870 census), the four classes form into a clear hierarchy of wealth. Shown below is the mean real and personal property by social class for parents of Central students in those years:

Class	Mean	N	Standard Deviation
proprietary middle	$26,310	(63)	42,471
employed middle	15,728	(13)	37,896
skilled working	6,127	(23)	7,881
unskilled working	2,084	(10)	3,604

Second, the occupational groups within each class showed relatively similar degrees of interest in attending the high school. Table 3.2 shows the distribution of occupations at Central and in the city as a whole in 1880(6) along with an index of representativeness, which is computed by dividing the Central percentage by the city percentage for a given occupation. With regard to representativeness, the self-employed middle class was quite homogeneous, with a rate of over-representation ranging from 1.5 to 2.3 around a mean of 2.0. The employed middle class shows a more scattered distribution of this index; but with a range of 2.0 to 6.4 and a mean of 3.6, the occupational groups which constitute this class (with the sole exception of clerks) were sharply differentiated from the proprietary class in degree of representativeness.

The class distribution of students admitted to Central High School between 1838 and 1920 is shown in Table 3.3. The two most striking conclusions to be drawn from it are that Central students were overwhelmingly middle class in origin and that their class composition changed very little over time. On average 67.8% of the students throughout this period came from middle class families, and individual cohorts did not vary much from this figure. If 1838 to 1840 is excluded (because the number of proprietary middle class persons is understated in these years)(7), the middle class proportion over a 70 year span occupies a range between 62.2% and 73.5%. The proprietary middle class alone accounted for nearly half of the student body during this whole period, while the employed middle class averaged about 20%, skilled workers 25% and other workers contributed less than 7%. Proportions fluctuated from year to year, but no clear trends emerge over time. Central was a middle class school from the very start and nothing that happened during its first 80 years altered that fact.

It will be easier to interpret Central's class composition if it is compared to the class composition of the city as a whole. Table 3.4 shows the proportions of Philadelphia heads of household in each social class for

1850 to 1880, years in which data from manuscript census samples are available. Table 3.5 converts these figures and those from Table 3.5 into an index of representativeness. The percentage at Central in a given class for a particular year is divided by the percentage of Philadelphia heads in the same class that year. This number provides a measure of the degree to which the various classes were disproportionately represented at the high school. Obviously the middle classes were heavily over-represented at the high school while working class sons, especially those belonging to unskilled parents, were heavily under-represented. On average the index for the proprietary middle class was 2.2, for the employed middle class even higher at 3.4, for skilled workers 0.6 and for unskilled 0.3. Consider the case of employed middle class vs. skilled worker: while they provided similar proportions of high school students, the latter group was five to ten times as large as the former in the city as a whole. Class is thus clearly a significant factor in predicting which boys would attend the high school. Goodman and Kruskal's Tau, which is reported on Table 3.5 for each year, can be interpreted as showing that knowledge of the class distribution in the city and the school can reduce the error of predicting high school attendance by between 14% and 24%.

Before coming to any firm conclusions, however, the

Central vs. city comparison must be extended over the whole period from 1838 to 1920. Unfortunately this involves shifting the base of comparison because no manuscript census data has been analyzed after 1880. The alternative is the published census, but it poses two problems. First, information is given by sex but not by household head, which means that Central heads must be compared with Philadelphia males.(8) This introduces life cycle distortion, since the latter group includes a large number of young men just starting out in the job market while the former is limited to persons at their occupational prime. Second, the published census provides no way of distinguishing master artisans from others with artisans' titles. For purposes of this comparison, therefore, I have moved the Central masters back to the skilled working class where the census records them. Table 3.6 reflects this change.

The distribution of Philadelphia males from 1850 to 1920 is shown in Table 3.7. However before proceeding to compare Central and city we need to examine the degree of distortion introduced by the new comparative base. Table 3.8 measures this distortion by dividing the head proportions from Table 3.4 by the male proportions from Table 3.7. As the results show, working class representation is largely unaffected by the change while the new base has a considerable impact on the middle class. Looking at 1880 alone, the male distribution understates the proprietary middle class proportion by a third while it overstates the employed middle class proportion by a third. In other words, a number of young men started out in a form of white collar employment (most often the ubiquitous "clerk" role) and eventually worked up to a position of self-employment. But at the same time there seems to have been a tendency by 1880 for a employed middle class jobs to become career rather than transitions to proprietorships.

These considerations should be kept in mind during subsequent evaluation of the index of representativeness recorded in Table 3.9. Note that comparing males rather than household heads tends to inflate the index for the proprietary middle class and deflate the index for the employed middle class. The net result is that this index should be used as a measure of the change in representativeness over time rather than as a reflection of the degree of disproportion found in the high school at any one moment.

The index reveals no pattern of change in the representation of unskilled working class, but the skilled workers show a slow but steady increase in representation between 1880 and 1920. More dramatic is the marked decline in the representation of employed middle class sons from 2.7 times their population share in 1880 to 1.0 in 1920.

There is little change in the proportion of Central students from this class during that period; the decline in representation is due entirely to a rapid increase in the proportion of white collar employees in the population. An important point which I will attempt to explain later is where this growing number of employed middle class boys was spending adolescence if not at the high school.

Equally dramatic and stretching over an even longer time is the steady increase in the representation of the proprietary middle class at the school, growing from 1.6 in 1860 to 3.4 in 1910. As with the business employees, the change was not in the proprietary middle class proportion at the school but in the population as a whole. The proportion of the self-employed among city males declined steadily from 16.8% in 1860 to 11.3% in 1920, while this group's share of the students admitted to Central remained constant at about 40%. The reason for this finding will be explored at the end of this section.

Stability of the Class Distribution

The two major findings of this review of social class at Central High School are that the students were overwhelmingly middle class and that the proportions of classes represented in the school stayed remarkably constant over time. Both issues need to be explored more fully; to begin I will examine the stability of the distribution.(9)

A good way of testing the stability of the distribution of students' class origins is to observe whether it is affected by important events in the history of the school. And the most salient events are those involving admissions testing. The exam was dropped in favor of quotas in 1868, restored along with quotas in 1877 and eliminated entirely in 1900. One might expect that these changes would have had a noticeable impact on the type of students admitted in their wake, but there was in fact no apparent change in class distribution of the students entering in 1870, 1880 and 1900 that is attributable to these changes.

Yet an exam effect is visible in 1850 and 1860, due not to the existence or absence of the exam but to the flexible manner in which the school administered it. While the school was under pressure to follow a strictly meritocratic procedure with the exam, it was still free to set its own standard for admission during this period by adjusting the way the exam was written and graded in order to meet its academic and political needs. In 1850 Central was at the peak of its organizational powers: its entrance requirements had just been raised the year before and at the same time the state had authorized it to grant college degrees. Not surprisingly there was a sharp drop in the number of students admitted in 1850 and the percentage admitted (54%) was the lowest recorded between 1839 and the advent of quotas. This same year the proprietary middle class share of the entrants reached 60%, the highest level ever. Ten years later the school was under investigation and its budget was threatened; as a result both the number and the proportion of students accepted (88%) reached new highs. Simultaneously the proportion of proprietary middle class students declined from 60% to 44% while the proportions of all other classes rose, especially the skilled workers who achieved an 80 year peak student share of 30%. The Tau for this year was the lowest of any of the cohorts.

It appears that the existence of an admissions exam had less effect in certain years on the class distribution of Central students than the way in which it was administered in those years. A radical tightening or loosening of the standard employed by the examiners had an impact on the class composition of the school's students, but a shift on two different occasions to a wholly different method of selecting among applicants -- quotas and certificates -- seemed to produce no such impact. Therefore one can conclude that while the exam had the potential (occasionally realized) of imposing a class bias on the student selection process, its overall effect on this process was no more class biased than the alternative methods of selection that were tried. Of course any method which aims at picking the best students (as measured by grades or test scores) is likely, then as now, to put working class aspirants at a disadvantage: witness the larger number of proprietary middle class students selected under the more rigorous admissions test of 1850. But this was not a matter of concern under the strict standard of merit espoused by Central's leaders. The quotas they acceded to were directed toward political and organizational goals (freeing grammar schools from the high school's tyranny) and not toward the more egalitarian goals of modern quotas (giving special consideration to the disadvantaged). What they aimed to provide at Central was a way for everyone to compete on an equal basis for a seat at the high school, but they sought to admit only those of proven worth.

Of course the sheer magnitude of middle class over-representation at the school seems to contradict prima facie the school's claim to a meritocratic admissions procedure. Yet the suggestion was made earlier that students admitted were perceived as highly qualified, whatever their class origins. And now there is a suggestion that Central's skewed distribution of classes cannot simply be blamed on a biased entrance exam. Although the evidence on the subject is thin, none of it has helped disprove the assertion of those connected with the school that Central's admissions procedures were designed to select the academically talented.

Another part of Central's history which might be seen as influencing its class distribution is the sharp increase in the number of students admitted at the end of the century. After remaining at the level of about 500 for nearly 50 years, the school grew from 561 in 1890 to 1,235 in 1900, 2,301 in 1910 and 2,802 in 1920 -- paralleling increases in high school enrollment elsewhere in the country. Yet this dramatic increase in numbers did not yield a more representative student body. As Tables 3.3 and 3.9 show, the change had no observable impact on the relative size of the four social classes in the cohorts admitted during those years.

A third potential influence on student class is changes in curriculum. The major innovations over the years included: the abandonment of all but the principal course in 1856; introduction of a differentiated college-preparatory curriculum in 1888; addition of a commercial course in 1898; merger with Central Manual Training School, bringing in a mechanical arts course in 1912; and the Philadelphia Trades School merger, adding an industrial arts course in 1919. The tables indicate that none of these changes seems to have had a significant effect on the class origins of the cohort that entered on the heels of each change. Even in 1920, after two mergers, the only noteworthy alteration is the increase in unskilled workers from 5% to 11%. Only if the industrial students are isolated from the rest does a different distribution appear, with half the usual number of proprietary middle class students and twice the number of skilled worker sons.

A Very Middle Class School

In addition to being stable over time, Central High School's class distribution was strongly skewed toward the middle classes. This in itself is hardly surprising. A number of recent and not so recent quantitative studies have confirmed a longstanding belief in educational history -- that the American high school in the nineteenth and early twentieth centuries was filled with middle class youths. Katz found that 98% of the students at Somerville (Mass.) High School in 1860 were middle class(10); Troen found the proportion to be 73% in St. Louis in 1880(11); Perlmann computed proportions ranging from 36% to 61% for Providence high schools in 1900 and 1915(12); while Counts figured the rate at between 60% and 80% in four different cities in 1920(13).

There are several explanations for the emergence of this pattern. First is the matter of opportunity cost. Middle class families could more readily afford to forego the earnings of their teenage sons than could working class families, and thus the former kept their sons out of the workforce and in school longer. Katz and Davey, for example, have shown that in Hamilton, Ontario between 1851 and 1871 school attendance for working class teenage boys rose and fell dramatically with the supply of jobs while middle class youths were largely unaffected.(14)

A second reason is culture. As this study has been demonstrating, Central High School's image, its tone, its founding values and its pedagogical goals were inextricably linked to middle class culture from the start. As a result it was a very attractive and reassuring place for middle class parents to send their sons and considerably less so for working class parents. The issue of class culture will be elaborated more fully in the conclusion to this chapter.

Both of these reasons for middle class domination of the high school are based on characteristics of the middle class as a whole. However the data on Central's class distribution suggest the desirability of constructing separate explanations for the strong interest shown in the school by the old and employed middle classes. Table 3.9 showed that the degree of proprietary middle class over-representation at the school increased steadily from 1860 to 1910 while employed middle class over-representation declined during most of the same period. The change was not due to an alteration in the class ratio within the school (which remained constant) but instead to a decline in the proprietary middle class proportion of the city's population and a corresponding rise in the employed middle class proportion in the city.

To understand the trend of proprietary middle class attendance at the high school, one must consider the defining characteristics of this class: it was made up of occupational groups which existed prior to the development of industrial capitalism and its members were self-employed, with shopkeepers and master artisans constituting a majority. The rise of large-scale business enterprise starting in the middle of the century posed a serious and permanent threat to these groups. Factories and department stores began to drive small manufacturing and retail shops out of business. As Table 3.7 shows, the proportion of proprietors to non-proprietors declined by a third between 1860 and 1920, from 16.8% to 11.3%.

The traditional means for the proprietary middle class to transmit class position to its sons was by transferring property -- turning over ownership of the family business. Yet in the mid nineteenth century, this method was increasingly unreliable for many families as the viability of the small shop declined. To these hard-pressed families the high school threw a lifeline. It offered them a chance to invest foregone earnings in a form of cultural and human capital to replace their devalued business capital. Their sons could acquire some useful commercial skills and cultural values and emerge with a set of distinctive credentials certifying their worth. They could then move into positions within the expanding white collar employee sector of the middle class. Thus the high school aided in the process of transmitting middle class position by helping to transform old into new. Logically then, an increasing proportion of the city's proprietary middle class families would take advantage of this opportunity as the viability of maintaining proprietary middle class position declined. And the drop in their population share between 1860 can be taken as a measure of just such a decline in viability.

The employed middle class, by contrast, was a prime beneficiary of the rise of industrial capitalism, for white collar workers occupied an expanding share of the workforce. As employees rather that proprietors, they sought to maintain middle class status by fortifying and certifying their employability rather than through property transfer. In the same way as for the proprietary middle class, therefore, the high school presented itself to this group as an invaluable aid. Yet with an important difference: in the absence of a family business, the employed middle class was more dependent on Central High School credentials than the proprietary middle class, at least at first. For the portion of the proprietary middle class with shops that continued to be profitable, the high school was an option but not a necessity. The employed middle class however lacked the property option. The result was that between 1850 and 1880 this class was consistently more over-represented at the high school than the proprietary middle class, with an average index of 3.4 as opposed to 2.2 (see Table 3.5).

But between 1880 and 1920 the employed middle class proportion of the city's males doubled while that class's share of the Central student body remained constant. If indeed the employed middle class was more dependent on the high school than the old, then one must ask what its members were doing with their sons. One possible answer is that the sons of this class may have been drawn in disproportionate numbers to the manual training schools, the first of which opened in Philadelphia in 1885. Central Manual Training School (CMTS) was located only a few blocks from Central High School and therefore drew its students from the same population. Class distribution figures for students at CMTS are available for 1900, permitting a comparison with figures for the high school in the same year. As Table 3.10 shows, while the overall middle class proportion was the same in the two schools, CMTS did indeed have a higher proportion of employed middle class students (32.6%) than did the high school (24.8%). Put another way, at the high school the proprietary middle class students outnumbered those from the employed middle class by a ratio of nine to five while at the manual training school the ratio was seven to six.

One explanation for this finding focuses on curriculum. In 1888 Central High School shifted away from its traditional practical curriculum (oriented toward the working world rather than further education) and toward a college-preparatory course. But at the same time the new manual training schools were offering a program similar to Central's abandoned practical course which only required three years to complete (as opposed to four years for the high school). Such a program would seem preferable for families that were in a hurry to see their sons acquire credentials and enter the white collar work force. It is arguable that employed middle class families would be more in a hurry than those of the proprietary middle class, who had an option requiring no secondary education at all (the family business) and who had more wealth to cushion the pursuit of college credentials.

However if Central's new curriculum alienated a portion of its historic employed middle class constituency, it probably helped to retain the equally historic proprietary middle class clientele which had always supplied nearly half its students. The latter's support for the school peaked in 1910 when the proprietary middle class index of representativeness moved to 3.4, the highest level on record for any class, and Tau (measuring the effect of class on attendance) also reached a peak at .230 (see Table 3.9). The implications of these curriculum changes will be explored in the following chapter.

3. GRADUATION: CLASS AND MERIT

The students who were admitted to Central High School between 1840 and 1920 were disproportionately and consistently middle class in origin. This much is beyond dispute. What is less clear, however, because of the state of the existing evidence, is whether these students won their seats at the high school as a result of personal merit alone. In the absence of hard data, I have suggested that the entrants may well have been the students with the best test scores and grades among the group that sought admission. But most students did not seek admission, and with working class students this decision probably had less to do with a lack of academic ability that with cultural incompatibility and the need to take a job. It appears therefore that despite the meritocratic rhetoric of the high school's founders, it was not merit alone that guarded the entrance to the school but class and merit together.

At this point it is useful to shift the focus from Central's entrants to its graduates in an effort to discover whether a student's chances of graduating from the high school were influenced most by personal merit, by class or by other considerations. Fortunately the results of this analysis will be more definitive than the preceding discussion because of the existence of data tracing student performance at the high school as well as family backgrounds.

Before moving on, however, I should explain why I chose to use graduation rather than length of stay in school as the key dependent variable. It could be argued that length is preferable because it is a continuous variable with a true distribution of values, while the graduation variable puts students into one of two categories according to whether they did or did not graduate, thus ignoring the differences in length of those who left early. But I found that graduation better captured the behavior of Central students than length. Consider the following table:

No. of Years at CHS	% of Total Students
1	37.1
2	23.8
3	10.7
4 or more	28.4

While more than 60% of the students dropped out by the end of the second year, the large majority of those who stayed beyond that point continued to the end. Thus length does not represent a process of steady attrition so much as a process of bifurcation: one group left early and another stayed.

This view of the length variable is supported by data on student performance. To jump ahead of my argument for a moment, it turns out that both length and graduation are best predicted by student grades. But as the following table reveals, grades do not rise as a linear function of number of terms in school:

No. of Terms at CHS	% Students with Top Grades
1 to 2	2.9
3 to 4	10.5
5 to 6	13.5
7 or more	48.9

According to this table it would be misleading to assert that the better students stayed longer in the school. In fact the relationship is better represented as dichotomous: those who went on to graduate were by far the best students while those who left early had much lower grades that were largely undifferentiated by length. Given these patterns, I have adopted graduation as the most appropriate dependent variable to use in this analysis. (See Appendix for a discussion of the statistical implications of using this dependent variable.)

Class and Graduation Rate

Most Central students left the school prior to graduation. Between 1840 and 1920 an average of only 26.9% of the entrants graduated. This rate stayed relatively stable over time, for in only three of these years did it vary more than a few points from the average. (See Table 3.11.) In 1838 to 1840 and 1910 more than a third of the students graduated. The first of these occurrences could be attributed to a pent-up demand for a high school among the school's most able prospects which was met by Central High's opening. The second, coinciding with the peak in proprietary middle class interest the school, is a result of the school's increasingly college preparatory orientation. By contrast, the class entering in 1860 had its graduation rate slashed by the onset of the Civil War.

An attrition rate of 73% invites speculation about the possibility of differential class effects on students' length of stay. If working class students failed to apply for admission to Central in part because of the need to help support their families, it seems logical to assume that those who did enter would not on average stay at the high school as long the old middle class. This hypothesis can be tested by comparing the class distributions of entrants and graduates for the school as a whole and for each year. The results of such comparisons are displayed on Tables 3.12 and 3.13.

The effect of social class on graduation rate is revealed as being quite weak. A comparison of the average figures for the entire 80 year period (Table 3.12) shows that the distributions of entrants and graduates are remarkably similar. The proportions of students in each of the two working classes changed by less than one percentage point between admission and graduation and the proportions in each of the two middle classes changed by less than three percentage points. Expressed in terms of graduation rates this means that overall the proprietary middle class graduated 29.1% of its students, employed middle class 25.5%, skilled working class 26.5% and unskilled working class 26.6%. (The general average was 26.9%.) Thus over eight decades the average effect of class on attrition boils down to a slightly higher chance of graduation for proprietary middle class boys.

Of course averages can conceal important year-to-year differences, especially since the large size of the later classes swamps the effects of earlier classes; for this reason class distributions and graduation rates for each cohort are also shown on Table 3.13. There are several problems involved with the interpretation of these yearly figures, however. The primary one is size. Between 1838 and 1900 the sample for each entering class ranged between 85 and 150 and therefore, given the high attrition rate, the number of graduates amounted to between only 20 and 41.(15) The result is that both the class distribution of graduates and the graduation rates for individual cohorts are based on small numbers of students and thus should be expected to have high variances. In addition there is the problem of the cases with missing and unclassifiable occupations. Graduation rates for these cases, recorded for each year, show the missing and average graduation rates are quite similar, and as a consequence the exclusion of these cases appears to have little effect on the distribution of graduates. However in other years these cases are clearly not neutral in their effects on graduation and their exclusion undercuts the validity of the graduate distribution that year: for example, in 1910 half of the students with missing occupations graduated compared to only one-eighth in 1920.

As a result of these considerations, the average distribution for 1838 to 1920 should be seen as the most reliable source for understanding the effect of class on persistence. The cohort figures are useful for two lesser purposes, however. First, they reveal that the average distribution is not masking wide variations in class effect from year to year. Given the small numbers and missing cases, the variation in graduation rates is not large enough to be significant. Second, rates by year show that the proprietary middle class had a higher graduation rate than any other class in five of the nine cohorts and was higher than the employed middle class in all except one. The latter differences were not large for the most part but they were persistent enough to attest to a small but real advantage for the proprietary middle class in graduation rate.

Conclusion: Findings from the Central student data provide no basis for the hypothesis that class exerted a powerful effect on a student's chances for graduation.

Instead it was found that working class boys had graduation rates identical to the school average. Thus once students from the working class won admission to the high school, their class background provided no impediment to their further academic careers. What small differences existed were within the middle class, where the proprietary middle class graduated at a rate two points above average and employed middle class at a rate one point below average. With class revealed to be a minor factor in the explanation of graduation rate, the monocausal model underlying the preceding analysis will at this point be abandoned in favor of a multivariate approach.

Multiple Classification Analysis

The technique I will be using in the sections that follow is multiple classification analysis (MCA).(16) MCA is a form of multiple regression with dummy variables which allows the researcher to estimate the effects of each level of a categorical variable (called a factor) on a continuous dependent variable, while controlling both for other factors and for interval-level independent variables (known as covariates). It is limited to the analysis of main effects only. Thus any factors that interact relative to a given dependent variable must either be combined into a single variable or used in separate MCA models. Once this hurdle is cleared, however, MCA can be a technique with definite advantages for handling historical data. Not only are historical independent variables usually categorical (and thus appropriate for MCA) but they are also frequently correlated. While ordinary multiple regression cannot allow the simultaneous use of correlated variables, MCA (like regression with dummy variables) is permissive toward such factors as long as the correlation is not extreme and no interaction occurs. In addition MCA provides the researcher with an important statistic which dummy variable regression cannot: an estimate, beta, of the overall effect of each factor after controls. (See Appendix for a more detailed discussion of MCA.)

The results of all MCAs in this chapter are displayed in a similar fashion. The grand mean of the dependent variable is shown along with the mean level of that variable for each category of each factor after adjusting for all other factors and covariates. In addition the statistical significance of the factor is recorded beside its beta. A beta in MCA is analogous to a partial standardized regression coefficient, not a partial correlation coefficient. As a result beta is best interpreted as a measure of the relative importance of a factor within a model rather than as a measure of variance explained. For each covariate an unstandardized regression coefficient and level of significance are provided. Finally at the bottom appears R squared (the multiple correlation coefficient squared) and a second R squared which is adjusted for degrees of freedom, compensating for the overstatement of explained variance with small samples.

MCAs were performed on three different subsamples of the Central High School dataset. The first includes all of the students from the dataset except those who entered in 1838 to 1840, for whom there is no grade information. This is the broadest and thinnest of the samples: it contains the relatively small number of variables that were recorded for all eight of its cohorts. It will be referred to as the "general" sample (N = 2,467). The second sample is limited to students from the years 1850 to 1880 and 1900 whose families were located in the census manuscripts. This is a much smaller sample (N = 814), restricted as it is to five cohorts in years when the number of entrants was small, and further restricted by the linking requirement. Yet it has the considerable advantage of allowing me to introduce the household variables from the census into MCA models. It will be referred to as the "census" sample. The third sample consists only of those cases from 1910 and 1920. This is the narrowest time span covered by any of the operational datasets, but, in compensation, there are available for these years extraordinary arrays of data on student performance in the high school and even in grade school. This last sample will be referred to as the "performance" sample (N = 1,086).

The General Sample, 1850-1920

The strongest model for explaining the variation in graduation rate over this period contained five factors and no covariates. Let us consider each of these variables in order. The dependent variable is coded one if a student graduated and zero if he did not, and thus the means of this variable can be read as an average graduation rate. Class is measured in five levels, the four already discussed plus a fifth for cases with missing or unclassifiable occupations. Grammar school frequency places a student into one of five categories according to the number of boys in the whole sample who attended the student's grammar school. This represents a crude attempt to assess the effect of previous school under conditions in which students in the aggregate attended a large number of different grammar schools. Age refers to age at the time of admission to the high school. A fourth factor provides a simple measure of grades. Student grades exist for 1910 and 1920 but not for earlier cohorts. However between 1850 and 1900 commencement programs for each term recorded the names of students whose averages exceeded 85. This information was coded for each member of the nineteenth century portion of the sample for each spring the student was in attendance and the grades of twentieth century students were converted into the same format. A dichotomous variable was created which coded students according to whether they had one or more terms with high grades during their careers (1) or none (0). The final factor is cohort.

Table 3.14 shows the results of an MCA using these factors. Clearly, grades were by far the most powerful predictor of graduation rate with a beta of .50; at the other end of the scale class was statistically insignificant in its effect with a beta of only .03. Thus the already established weakness of the bivariate relationship between class and graduation is confirmed by the introduction of controls, but the force of the effect of grades is quite powerful. Its beta is more than three times the size of the next largest beta, and the adjusted R squared of this model is .307 while the same figure for the model without grades as a factor is only .081 -- a difference of .226. This means that grades alone "explained" 23% of the variance in graduation behavior; to put it another way, grades accounted for 74% of the explanatory power of the model as a whole. One could argue, of course, that class might have a strong indirect effect on graduation, by influencing the distribution of grades. But when an MCA is performed with grades as the dependent variable, class once again fails to achieve statistical significance.

It will be useful at this point to consider the effect of each factor in some detail. About social class there is little to add except to note that the predicted graduation rates by class after controls are very close to the actual rates shown earlier, a finding that enhances our confidence in the general validity of the estimates produced by this model.

The grammar school frequency factor was significant but not very strong with a beta of .09. Students from schools in the highest three frequency categories tended to graduate at a rate three to ten points above those from the low frequency schools. When the high frequency students are examined as group they appear to have little about them that is distinctive -- their grades, for example, are average -- except a higher rate of graduation. To put this another way, their primary distinction is that they came from grammar schools which succeeded in both enrolling and graduating a disproportionately large number of Central students.

Two possible explanations for the influence of this factor suggest themselves. One is that the most common previous schools for Central students would be those nearest the school, since most of its students lived within walking distance of it. Those who came from farther away and thus from schools who sent fewer students to Central may have felt pressure by the longer commute to seek an early exit from the high school. The second possibility is of more theoretical interest. Recall that during much of the nineteenth century there was an intense competition among grammar school masters over gaining admission for their students to the high school. The high frequency schools were the long-run winners of that competition, a status they achieved by preparing their students for Central's exam and, by implication, its curriculum better than other schools. Students who received this preparation may have been in a stronger position than most to survive the rigors of the high school experience. While grades measure the performance of the student, this factor may measure the performance of the grammar school as a preparatory school. If this is true then the full impact of this factor is being masked by the presence within it of a simple proximity effect. Schools would have to be geographically coded in order to sort out the separate effect of location and preparation.(17)

Age at admission had a stronger impact on graduation than either the class or school variables with a beta of

.16. Except for the oldest category, there appears to be a linear relationship between age and graduation, with unadjusted graduation rates rising from 12% at 16 to 51% at age 12. The main reason younger students graduated more frequently is that they were better students. More than 34% of those under the age of 14 at admission received a high grade average (85 or over) at least once -- compared with only 9% of those over 15. Yet there is more to the effect of age than this, since its beta already controls for high school grades and since its mean graduation rates after controls were similar to the unadjusted rates, ranging from 17% to 51%. It turns out that younger students performed better than average in grammar school as well. A variable in the performance sample records the number of pre-high-school grades that a student flunked and skipped. While students under 14 represented only 17% of the total number of students in this sample, they accounted for 78% of all those who skipped grades in elementary school.

These findings suggest that age is a more interesting variable than it first appears to be. I propose to use it as a proxy for pre-high-school academic performance in analyses using the general or census files, which lack any other measure of this behavior. It is certainly a crude and indirect indicator, but its relatively strong association with other measures of secondary and elementary school performance, its strong effect on graduation chances and its general availability make it a useful factor.

The power of the high grades factor is revealed in its predicted graduation rates. With other factors held constant, students who received high grades at some point in their stay at the high school graduated at a extraordinary 73% rate while only 16% of those with no high grades graduated. This means that the best students were more than four and one-half times as likely to graduate as the rest. None of the other variables in this model produced differences in graduation rate that were even close to this in magnitude. High grades thus emerges as a factor that is qualitatively distinct from the others.

Since merit -- the most theoretically salient concept in this chapter -- will be examined largely through the medium of this variable, the high grades factor must be subjected to a critical evaluation to determine if it provides a valid measure of student performance. One identifiable problem with it is that it divides a continuous distribution of grade point averages into only two categories -- best and other -- and thus misses the difference, for example, between average and poor performance. A more finely graded variable which better represented this distribution might have a markedly different effect on graduation than the dichotomous version. A second problem with the variable is its bias toward graduation. Students who remained at the school for four years had four times as many chances to achieve high grades as a student who left after the first. In an effort to eliminate this problem I created a new form of the variable which was expressed as a rate -- the ratio of years with high grades to total years in the school. Unfortunately testing revealed that the new variable introduce greater distortion into the MCA model than did its predecessor. Since only graduates had a denominator of four, the categories containing high grade rates of 25% and 75% were almost entirely filled with graduates, which inflated beta and R squared beyond the level produced by the dichotomous variable. As a result I have chosen to use the simple zero-one form of representing grades in both this and the census files.

The reason for concern about both of these problems with the high grades factor is that both could lead to an inflated beta for that factor. This in turn could prompt an overestimate of the influence of merit on the process of conferring educational credentials. However, the performance sample shows that this simple dichotomous variable represents the effect of an actual distribution of grades with remarkable fidelity. The sample contains a seven category factor which reflects a student's career grade point average. In a variety of different models using graduation as the dependent variable, this factor maintained beta at a consistent level of approximately .54 -- compared to .50 for high grades in the current model. It appears that the bias toward graduation of the two-category version effectively simulates the greater explanatory power of the seven-level variable. Thus one of the deficiencies of high grades helped cancel out the other. As a result the high grades variable can be used in this and future analyses as a valid means of estimating the effect of student performance on graduation.

Cohort is entered as a factor in all of the MCAs in this chapter. Its primary function is to control for the effects of year to year differences. In addition its means reflect the impact of cohort on graduation after controlling for other factors. In this case rate of graduation rose steadily from 1870 to a peak in 1900 and then dropped back. Note that the unadjusted graduation rate of 34% for 1910 declines to 26% after controls, reflecting the fact that the high rate was due to high grades in that year. The beta of .16 can be interpreted as indicating that cohort had a significant independent impact.

Although the cohort factor statistically controls for the effect of year of entry and even estimates the nature of this effect for each year, the MCA of the whole general file obscures a number of year to year differences -- particularly the relative strength of the factors over time and the relative power of the model over time. Therefore the same model (minus cohort) was run for each year from 1850 through 1920. The results are summarized in Table 3.15. The problem with this approach is that the sample sizes, especially for the earlier years, are rather small to provide the basis for a multivariate analysis. Under such conditions predicted categorical means are unreliable and thus they are not shown. The results, however, do permit a year by year comparison of betas and squared multiple correlation coefficients.

The major conclusion to be drawn from this table is that the findings of the full-sample MCA prove quite stable over time. The high grades factor had the highest beta in every year and was also the only factor that was statistically significant every year. Age had the second highest beta seven out of eight times; and class had the lowest beta five times while reaching a minimum significance level only twice. The adjusted R squared values for the individual cohorts are generally higher than for the full-sample MCA, rising from 1860 to a peak in 1890 (where the beta for grades reaches .71) and tailing off quickly to their lowest level in 1920 (where the beta for grades is only .38).

The Census Sample, 1850-1880 and 1900

The census sample presents the opportunity to strengthen the model for explaining graduation by the addition of several family variables. After a considerable amount of experimentation, the model displayed in Table 3.16 emerged as the strongest and most theoretically interesting alternative. It consists of eight independent variables (five factors and three covariates) including three variables not used before -- parent's birthplace, siblings and sex of family head.

The result is a more powerful model than the previous one, with an adjusted R squared of .401 compared with .307 for the earlier version. The all important high grades factor, meanwhile, is unaffected by the addition of the new variables; it has the same relationship to graduation as it did in the inclusive sample. Its beta is a hefty .52 (vs. the earlier .50) and its estimated graduation rates for those with and without high grades are 78% and 17% respectively (vs. 73% and 16%).

The discussion of the results of this new MCA which follows will focus on the new variables and on changes in the behavior of old variables. First, social class: the additions to the model strengthened the effect of class to the point where it achieved statistical significance and won a more substantial beta of .12 (vs. .03). After adjusting for the seven other variables, MCA projects that proprietary middle class students and those with missing occupation codes had higher than average rates of graduation while employed middle and unskilled working class boys had lower than average rates.

It has already been shown that the two middle classes had somewhat different rates of graduation, but the difference is exaggerated here (with adjusted rates of 31% for the proprietary middle class and 19% for the employed middle class) because of characteristics of particular cohorts included in the sample. Out of the nine cohorts overall, 1850, 1870 and 1900 were the ones with the widest gap between the two classes, and all three are in this sample. As a result the unadjusted graduation rates for the census file are 32% for the proprietary middle class and 22% for the employed middle class, as opposed to 29% and 26% in the general sample.

Skilled and semiskilled-unskilled workers graduated the same proportion of their boys as did the school as a whole (27%); but while controls had no effect on the skilled rate, they reduced the unskilled rate to 17%. The reason for the reduced rate is that the latter class was strong in a number of variables which foster high graduation rates, yet its own rate was only average; thus after controlling for these variables the net effect of class on graduation was negative. For example the students from the unskilled working class were the youngest of any class at 13.6 years (vs. the average of 14.4); they had the highest high-grade rate at 30% (vs. 17%); and 100% came from families headed by males (vs. 90%). Sex of family head is a new variable which plays an important role in this model. Less than 10% of the students in the sample came from female-headed families but within this group there was an overwhelming tendency to quit school early and go to work: only 6.5% graduated, one-quarter of the graduation rate of male-headed families.

Clearly the Central student from the semiskilled and unskilled working classes was a very unusual boy with a number of special advantages -- hardly a typical representative of his class. It should be recalled that his class constituted only 6% of the student body although it accounted for between 25% and 40% of the city's population. He was much more academically talented than the other students, he moved through grade school at a relatively rapid pace (as evidenced by his young age of admission) and he enjoyed the economic security afforded him by a male breadwinner. These findings tend to support both arguments I have been making about the relationship between merit and the high school. On the one hand, the school selected and rewarded talent: even a laborer's son with proven ability could enter the high school, and once in he had as good a chance of graduating as anyone else. On the other hand, the fact that the average unskilled worker's son was so clearly more meritorious than the average student and still failed to graduate at a higher than average rate demonstrated that at this far remove from the school's dominant group (the proprietary middle class) class membership did have a significant impact on a student's length of stay at the school. And for students from the unskilled working class with less extraordinary abilities, Central High School would seem to have held out little promise at all.

The students in the missing and other category had the highest graduation rate after controls in spite of having the lowest such rate before controls. By mining the census sample it is possible to develop a composite sketch of this residual group and by so doing move toward an explanation of this shift in graduation rates. The most salient characteristic of the students in this category is that 57% of them came from female-headed families. This helps explain why fewer of them stayed until graduation than those in other class categories and also why they had a larger number of siblings at work: their families were under economic pressure because of the absence of a male head.(18) These families appear to have been middle class, since in 1860 and 1870 property holdings in this group were at about the same level as those of the employed middle class -- $16,396 vs. $15,728.

The students of these families scored very low in school frequency and very high in entering age, both of which tendencies are strongly associated with a low rate of graduation -- as is female-headedness. To oversimplify the situation somewhat, they were poorly prepared for high school, had a poor performance record in grade school and were under economic pressure to leave school early to enter the work force. Under these circumstances it is remarkable that as many of the graduated as did, and when MCA controlled for the effects of these variables the resulting graduation rate was therefore high. I interpret this finding as representing a victory for middle class values. If in spite of considerable disadvantages and the lack of superior abilities (the students had average grades) these families managed to keep their sons in school, this is a sign of a high degree of commitment to the educational ideal and to Central High School as an embodiment of it.

Overall social class emerges from the census sample as a factor with a significant independent impact on a student's chances of graduation. However it is important to recognize that its impact was felt only in the marginal cases. After correcting for sampling error, it turned out that being from the old or employed middle class had only a small effect on graduation chances while being from the skilled working class had no effect at all. Thus for 80% of the students at Central High School, class and graduation were largely unrelated. It is only the unskilled and missing categories which exerted an influence on student persistence, yet they only constituted 5% and 15% respectively of the students who entered the school. The unskilled workers' sons saw their chances of graduation lowered in spite of their superior ability because of their families' urgent need for them to put their newly acquired white collar skills to work. At the same time the boys from middle class female-headed families (the largest group in the other category) saw their graduation rate raised after controls because of their dogged persistence in the face of multiple disadvantages. What is most interesting about these class effects is that the first is strictly economic (quitting early to go to work because of relative poverty) while the second is strictly cultural (staying in school in spite of lost earning power out of a commitment to the value of a high school education).

The "birthplace of family head" factor had a beta of .10. Overall 30% of the students in the sample had a head of family who was foreign born. After controlling for other variables, students from the Irish, German and British families had only slightly lower graduation rates than those from the native born families. However Russian

Jews graduated at a higher rate of 32% while in the Northern European and other category the rate was highest of all at 48%. (Since all of the Russians in the sample entered the school in 1900, during the period of extensive emigration of Jews from Russia, I will assume that most of the Russian students were Jewish.) Examining the Russians first, the proportion of this group that graduated (before controls) was an extraordinary 70%. Perlmann noted that in Providence after the turn of the century Russian Jews also had the highest rate of graduation from high school among various ethnic groups (though at a lower level, ranging from 21% to 45%). But he found that this advantage largely disappeared when he controlled for social class.(19) At Central, however, the class distribution of Russian Jews was similar to the class distribution of other students. The factor which in this model cut their graduation rate from 70% to 32% after controls was grades. The students of Russian extraction had the highest proportion with top grades of any of the ethnic groups -- 30%, compared with 17% overall. Thus Russian families sent very good students to Central High School, which accounts for most of their remarkably high graduation rate; yet being from such a family had an impact beyond academic ability which led these students to graduate at an even higher rate than one would predict on the basis of grades. As a result the rate remains high even after controlling for grades.

The residual ethnic category consists primarily of non-specified Northern Europeans. The students from these families did quite well for themselves, graduating at a 48% rate both before and after controls. Unlike the Russians their success was not because of but in spite of grades, for only one of the 23 students in this category (4%) ever achieved recognition for high grades. The experiences of these two groups have strikingly different implications. For the Russian Jews present a model of meritocracy triumphant, with the sons of religious refugees achieving the high school's highest reward, the diploma, because of their proven superior ability. However the Northern European students represent just as clearly a counter-meritocratic tendency because of their capacity to acquire that same diploma without having to demonstrate worthiness.

The same point could be made about ethnicity that was made about class: it is a variable that exerted very little influence over graduation chances except in two marginal categories. These two categories, Russian and Northern European, contain between them only 7% of all students. If class and ethnicity are combined, it turns out that 80% of Central students came from the middle or skilled working classes and from native, Irish, German or British ethnic groups. For these students neither class nor ethnicity had much effect on their chances for achieving graduation; instead their own performance in school (as measured by grades) was overwhelmingly the most important factor.

The siblings factor, with a beta of .09, is a composite of two earlier variables which were found to be highly inter-correlated -- student's birth order and status of siblings 15 years and older (at work, home or school). The six categories of this variable are as follows: 1) youngest child, with one or more older siblings at work; 2) youngest child, with older siblings at school or home but not at work; 3) middle child, with older siblings at work; 4) middle child, with older siblings at school or home but not at work; 5) oldest child; and 6) only child.

The most important finding about this factor is that its effect on chances for graduation was largely uninfluenced by the other variables in the model. The adjusted graduation rates shown in Table 3.16 are not very different from the average rates for each category before adjustments. This means that what needs to be explained is simply the relationship between this factor and the dependent variable, without regard to other variables. The highest graduation rate was 31%, for students who were the oldest child. By contrast middle children had a rate of 26%, youngest children a rate of 22% and only children 24%. This pattern is counterintuitive. One would expect that, from the perspective of the family's economy, it would be less of a financial strain to support a son all the way through to graduation if he had older siblings contributing their earnings. Thus one would predict that youngest sons would be in a better position to finish school than oldest sons.(20) This logic holds only within the youngest group, where students with siblings who are also dependent score the lowest graduation rate of 14% while those with working siblings achieve a 26% rate. But when one turns to middle sons, it makes no difference to a student's chances of completing his course whether he has contributing or dependent siblings. And of course the oldest sons, with no older siblings to help out nonetheless stayed at the high school the longest.

This anomaly provides insight into the character of the families that sent boys to the high school and the educational strategies they adopted. That a sizeable majority of these students were from middle class families has been clearly established. But what the siblings data reveals is that these families were either quite well off or that they were willing to make considerable sacrifice for their sons' education. A high school degree was not something that they sought for their sons when the flow of income made it feasible. Instead they sent their first born to the high school and frequently kept him there until graduation. Either money was no worry to them or they assumed that education was too important to be deferred. However as sons moved down the birth order their chances of graduating declined. For middle sons this drop was not caused by the family's need for the student's earnings, since students in the middle of the birth order had the same graduation rate whether or not they had older siblings at work. Apparently middle class families simply felt it was more important to acquire advanced education for their oldest sons than for their younger sons. Yet these families were not immune to money pressure, for the chances of a youngest son graduating from Central were heavily dependent on the presence in the family of working siblings.

School frequency, sex of head and age at admission were all entered into the equation as covariates and their raw regression coefficients are recorded in Table 3.16. But these coefficients are a less fruitful basis for analysis than the betas and predicted means produced for factors. Therefore I performed a series of MCAs in which I inserted these three variables one at a time as factors in place of birthplace, also adding "head foreign born" (0,1) as a covariate. The results were not the same as would have been obtained if all eight variables could have been entered as factors in a single model (SPSS only permits five factors at a time) but they do at least give some indication of the strength and direction of these factors within the census sample.

School frequency is shown to be a weaker variable than before but is still significant with a beta of .11. After controls, students from the highest frequency schools graduated at a 36% rate while those in the next to the lowest category graduated at a 22% rate. Sex of head had a beta of .14 and adjusted means of 7% for female-headed families and 29% for those headed by males. Age at admission was the most powerful of the three as shown by its beta of .25. MCA predicted that, after taking into account the effects of other variables, 61% of the 12 year olds would graduate compared with 8% of the 16 year old entrants.

Table 3.17 shows the results of an analysis in which the current MCA model (with school frequency substituting for the cohort factor) was run for each cohort separately. As was the case with a similar table produced for the general sample (Table 3.15), the year by year view of the variables adds little to the MCA of the whole sample. Once again grades are the only factor that is significant for all years as well as the one with the highest beta in every year. Class exerted its strongest effect in 1900, primarily due to a very low adjusted graduation rate for unskilled workers that year. Birthplace was most potent in 1870 (because of low adjusted means for Germans and Irish) and 1900 (because of high rates for Russians and Northern

Europeans). The effect of the siblings factor was quite uniform over the cohorts while the effect of school frequency was not. The two years with the largest betas for the latter variable showed opposite effects: in 1900 students from higher frequency schools graduated at a markedly higher rate, but in 1860 it was those from the lowest frequency schools who graduated most often. Like other atypical behaviors exhibited by the class that entered in 1860, this last is probably related to the impact of the Civil War; yet this finding is also an indication that the school frequency variable may reflect a number of underlying tendencies other than pupil preparation. Age at admission proved to be stronger in 1870 and 1900 than in other years while the effect of having a male-headed family was considerably greater in 1900 than in any previous year.

The Performance Sample, 1910 and 1920

The third dataset to be used in this analysis of Central High School students contains a number of important variables which were not available in the samples discussed previously. These variables all focus on measures of student academic behavior -- including rate of progress through elementary school, absence, lateness, curriculum choice and grade point average. The MCA results shown in Table 3.18 are produced by a model which uses a selection of these and other variables to provide the strongest explanation of graduation within this sample. This model reflects the strengths and weaknesses of the sample itself. It includes a number of new measures of student performance, but it is missing the range of cohorts available in the general sample and the household variables found in the census sample. The net effect of these pluses and minuses is to produce an adjusted R squared for the model of .309, making it approximately as strong as the general sample model (.307) but decidedly less powerful than the census model (.401).

As before, the grades factor is by far the strongest, and its beta of .54 is strikingly similar to the betas for grades in the general (.50) and census (.52) samples. A more valid basis of comparison across samples, however, is the adjusted R squared due to grades alone. In the performance model grades explained .217, compared to .226 for the general model and .231 for the census model. The conclusion is quite clear: neither shuffling a variety of factors in and out of models nor switching from one subsample to another can disturb the considerable power of student performance to explain the pattern of graduation at Central High School.

Unlike the earlier models, the grades variable in this model is a true grade point average (GPA), calculated from individual course grades coded for every fall term of the student's career at the school (up to a maximum of five). These averages were clustered into seven categories from A to F and the adjusted graduation rate for each is shown in Table 3.18. Nearly all of the A and B+ students graduated, with rates of 89% and 87% respectively, while between B+ and B- the rate drops off by 27 points to 60% The large majority of students which the high grades variable identified as having had an average over 85 (for at least one term) are included in these top three levels of general grade average. (A number of those with B- career averages probably achieved B+ or better at some point.) By separating out the B and better students from the rest, that dichotomous factor captured the essence of the relationship between grades and graduation. For between B- and C+ students there was a gap of 33 points in the chances for graduation, with the rate dropping from 60% down to 27%. And below the C+ level essentially no one graduated.

Since graduation tended to decline with grades, the relationship between the two could be treated as linear and estimated via linear regression; but to do so would be to miss important characteristics of this relationship which are distinctly categorical. With few exceptions all of the A and B+ students graduated, compared with most of the B- students, some at the C+ level and none with averages of C-, D or F. At the very top and bottom of this distribution (B+ and above, C- and below) graduation rates are not differentiated by grades at all, but in the middle the differentiating effect of grades is quite pronounced. A small gap in GPA, between a B- and a C+, leads to a very large difference in graduation rates, between 60% and 27%. This suggests that grades were not used within the school as an interval level scale for ranking students according to incremental differences in their graded performance. Instead it appears that grades were used to categorize students and then that these categories were used as criteria for differential treatment. Despite the small differences in their averages, it appears that B- students were strongly encouraged to stay on until graduation while most C+ students were encouraged to leave. In terms of outcomes, it seems that one category was labeled "good student" and the other "mediocre student" and that these labels had as much effect on graduation chances as the averages themselves.

Central graduates had high general averages, but they also performed well in their first term at the school. Among graduates, 56% earned A or B averages in their freshman year; or, to express this another way, 49% of all students with A of B averages in the first year eventually graduated. In addition to making a strong showing at the start of their high school careers, the graduates also tended to improve their average grades over time. If one replaces grade point average in the model shown in Table 3.18 with either the average for the first term or the difference between first and last term averages, the model remains relatively strong even though GPA turns out to be the most powerful of the three.

This portrait in grades of Central's graduates underscores the importance of merit within the school. These boys were the school's best students as freshmen who had become even better students as seniors, implying that the high school not only admitted high performers but that it also fostered top performance -- at least among those who won an early position in the A or B student category. However those students who did not graduate (two-thirds of this sample) started high school with relatively low grades and ended their stay at Central with an even lower grade average. The latter finding implies that the other side of fostering high academic performance among meritorious students was a process within the school of promoting failure among those students who lacked merit -- a condition that was operationally defined by the school as having a C average or worse.

Turning toward the other variables in the model, social class was not statistically significant, a situation which also occurred in the general model.

However a new variable did prove significant, with a modest beta of .08. This measures the student's average rate of progress through elementary school by dividing his number of terms in school by the number of half grade-levels achieved. A rate of one therefore represents normal progress at one grade per year, while a rate of less than one means that a student skipped at least one half-grade and a rate of more than one means that a student repeated at least once. The graduation rates for the different levels of this factor, before adjustments for other variables, are shown below:

Elementary Terms/Grade Level	Graduation Rate
Less than 1	51%
1	35
1 to 1.15	23
Over 1.15	14

Grade school performance thus is found to be a very strong predictor of a student's chances for completing high school. The less than surprising reason is that boys who skipped elementary grade levels tended to have higher GPAs in high school than those who flunked, 2.5 vs. 1.9. As a result when the effect of GPA is taken into account, the adjusted graduation rates for this variable (shown in Table 3.18) occupy a narrower range between 26% and 37%. Yet the fact that this factor continued to have an effect independent of high school grades suggests that it -- and the age factor which helps predict it -- may act as a performance history effect for both students and the school. Success in grade school may have provided the student with a sense of academic empowerment which encouraged him to persist at schooling even when his grades may not have been encouraging. In like fashion grade school failure may have been able to undercut high school success for a student. The data support this interpretation by showing that only 40% of the B- students who flunked more than one grammar school grade graduated, compared to a 60% rate (unadjusted) for all B- students; while 41% of the C+ students who skipped elementary grade levels graduated, compared to only 30% for all C+ students. These good-student/bad-student elementary school labels may also have influenced the perceptions which high school professors formed of their students.

Another factor which was introduced in this model is the number of absences per term. On average, graduates had 3.9 absences and non-graduates 5.8. The unadjusted graduation rates for the different levels of this factor are shown below:

Absences per Term	Graduation Rate
None	15%
1 through 3	40
3 through 7	38
7 through 13	25
More than 13	6

The reason for the low graduation rate in the category with no absences is simply that students who stayed longer at the school increased their chances of having to be absent at least once; thus three-quarters of the boys with no absences left within the first year. Putting the "none" category aside, students with between one and seven absences per term had the highest graduation rates, while these rates faded quickly among students with a greater number of absences. When grades and the other variables are added in, the graduation rates at either end of the scale are reduced and the high rates are spread over the middle three categories; but the factor retains an influence independent of other variables in the model. The beta of .13 is however inflated by the presence of the category containing students with no absences because of this category's bias against graduation.

I interpret this variable as a measure of a student's attentiveness to studies. Students who were consistently absent a great deal would have trouble keeping up with their course work, whether the absence was by choice (playing truant) or not (becoming ill, having to earn money). The fact that absence affected graduation chances implies that the school felt that keeping up was important and necessary for advancement. It has already been demonstrated in a number of ways that Central High School was not a place that a student could hope to coast through with a minimum of application. He had to be a good student to be admitted and he had to improve once he was there. To succeed he needed to attend seriously to his work or he would have to leave the school, as most of his classmates did.

The cohort factor had a significant effect on graduation. Before adjustments, 34% of the 1910 students graduated compared with only 25% of those entering in 1920. It was noted earlier that the 1910 rate was unusually high for a school that graduated an average of only 27% between 1838 and 1920. The explanation was found in curriculum: students were graduating more often because the school was becoming more college preparatory in character. The reason for the dramatic decline in graduation rates between 1910 and 1920 also involves curriculum, as the following table illustrates:

Curriculum	Graduation Rate	
	1910	1920
Academic	41%	41%
Commercial	25	11
Mechanical		36
Industrial		15

While academic students continued to graduate at a high rate in 1920, the rate for commercial students fell sharply and the rate for the newly added industrial students was quite low. Thus the cohort effect here is partly a proxy for curriculum, which had to be excluded from this model because it interacts with both class and grades.

When the other variables are considered, the effect of cohort on graduation reverses, producing adjusted rates for 1910 and 1920 of 34% and 25% respectively. The reason for the switch is that at the same time that curriculum changes were depressing graduation rates, grade point averages were falling even faster -- from 2.42 in 1910 to 2.06 in 1920. Thus if grades are held constant, students in 1920 graduated at a higher rate than those entering in 1910. In a two cohort sample it is difficult to explain why GPA declined so sharply. The new courses were not the cause, for the averages of academic and commercial students were lower in 1920 as well. The most likely explanation is that grades were high in 1910 for the same reason that the graduation rate was so high that year, because of an infusion of unusually able students into the high school's college preparatory curriculum.

The two covariates in this model added little to its ability to predict graduation, contributing only .006 to the R squared. Number of latenesses per term was not significant while school frequency was barely significant with, as usual, a mildly positive effect.

When curriculum is introduced into this model in place of class and grades (with which it is found to interact), the model which results is very weak, and curriculum's contribution to the total R squared is only .047 -- compared with .217 that was added by GPA.

Table 3.19 shows the results of an MCA in which the model from Table 3.18 was re-run, dropping graduation as the dependent variable in favor of highest grade level achieved. This variable was missing from earlier samples, which instead had a measure of the number of terms a student spent in school. In earlier models I sought to explain graduation rather than number of terms because the differences between graduates and non-graduates were found to be much more significant than the differences among non-graduates with varying lengths of stay. Thus MCAs with graduation as dependent variable had larger multiple correlation coefficients than those using number of terms. Another difficulty with the terms variable is that it is constructed from two values with theoretically opposite implications -- the highest grade level achieved by the student plus the number of terms he was compelled to repeat. It thus confounds academic success and failure. Particularly in a study such as this in which merit (in the form of grades) is the key independent variable, it is less than desirable to focus on a dependent variable which can be increased by both merit and the lack of merit.

Highest grade level, however, presents some advantages as an alternative dependent variable: it excludes repeated terms, for all practical purposes it incorporates the fact of graduation within its eight grade levels (in Central's half-year grades) and it reflects the differences in attainment among the large number of non-graduates. Table 3.19 shows that this new dependent variable adds considerably to the explanatory power of the model, raising adjusted R squared from .309 to .416. Compared with the graduation model, the new model increases the significance level of the variables, and it raises the beta of elementary terms per grade and absence while keeping the beta of the other factors at about the same level. The predicted grade levels after adjustments maintain the same patterns within each factor that were set by predicted graduation rates. For example, the largest difference between GPA categories is the 1.78 grade level separating B- and C+ students. Yet the relative size of these differences is small. To use the same example, the gap between grade levels of 6.28 and 4.50 is less dramatic than the gap between graduation rates of 60% and 27% for the same two GPA levels.

The similarities between the two models are important because they signify that high grades and the other lesser factors that led some students to graduate from the high school also led a larger number of students to stay at the school longer than students who lacked these abilities and attributes. Yet the fact that the use of grade level tends to reduce the relative size of the differences caused by these factors -- especially the most potent of them, grades -- means that graduation retains a significance that extends well beyond that of being the highest of a progression of grade levels.

Throughout this chapter graduation has been shown to be qualitatively different from lesser forms of attainment at Central High School, and the analysis of grade level only helps confirm this. The theoretical implication of this finding is that a Central High School diploma was the key inducement for successful Central students and their parents rather than the accumulation of four years of schooling. Schooling is measured on an interval scale: the difference between one year of schooling and two is the same as the difference between three years of it and four. But graduation is measured on a nominal scale: one achieves it or one does not. Good students earned more years of schooling than those less able, but only excellent students were likely to graduate. The line between the two groups of students -- sharply drawn at the B-/C+ mark -- also defined the difference between certification and schooling.

4. CONCLUSION: A MERITOCRATIC VISION REALIZED

The evidence presented in this chapter strongly supports the conclusion that the meritocratic vision of Central's founders was in fact put into practice at the high school during its first 80 years. Just as Dunlap had declared, within it doors Central High School demanded "no passport to its blessings, or to its laurels, save that which the people demands, and forever will demand from all its sons -- INDIVIDUAL, PERSONAL MERIT." Far more than any other factor, a student's high school grades predicted his chances of graduation. Students with poor grades did not last long at the school, while those with better averages achieved promotion to higher grade levels; but only a small number of the very best students earned the "laurel" of a Central High School diploma. This finding was only slightly modified by the effect of a student's social class or ethnic group. Most the variables which did have an influence on graduation chances independent of grades were themselves measures of merit in different forms. Students who performed well in grade school, who attended grammar schools that prepared them well, who displayed attentiveness to their studies -- all were were more likely to graduate than others with less merit.

Central students were therefore given an equal opportunity to compete for the high school's laurels within the carefully circumscribed arena of academic performance. However equality of opportunity did not govern access to the school to the same extent that it controlled departure from it. While social class had little impact on graduation, it had considerable effect on admissions. A disproportionately large share of the student body was drawn from the the middle classes (one-half from the proprietary middle class alone) while a disproportionately small share came from the working classes, particularly the semiskilled and unskilled working class. As a result Central was from the very beginning a thoroughly middle class school and it remained so during the entire period studied. The high school may have been open to the sons of ploughmen, grooms and hewers of wood (to use Dunlap's examples), but very few of their number ever attended.

Yet it should not be forgotten that throughout most of the nineteenth century, admission to the high school could be achieved only by passing a formal examination and that this examination had a distinctly meritocratic character to it. The subjects were fixed in advance, grading was blind and questions were published after the fact. At the very least such a procedure increased the likelihood that only the better students among the middle class applicants would be accepted. As a result the exam helped establish the high school's credibility as an institution where merit mattered. Being from the proprietary middle class certainly made it more likely that a student would attend Central, but he still had to demonstrate his worth. Therefore class was important (de facto) in gaining admission to the high school, but merit was required (de jure). While merit alone guarded the exit to the high school, class and merit together patrolled the entrance.

Several reasons for the largely meritocratic character of Central High School suggest themselves. First, the school's stress on merit was no accident. Its founders deliberately fostered just such a tendency, and its presidents and supporters thereafter continually expressed their dedication to the meritocratic principle. For example George Riché wrote in his 1869 annual report:

> to [Central High School] the education of the BEST minds, the very ELITE of the students of the public schools is confided, a sacred trust! upon the faithful discharge of which depends much of the future welfare of Philadelphia.
>
> This last fact is profoundly impressive. It is the FEW highly cultured minds who are to guide the masses, and upon whom must devolve the solution of the social problems of the future, and all must recognize the grave responsibility resting upon an institution which assumes to mould and influence those of our children, whom God has gifted with the higher attributes of the race.(21)

Nearly 20 years later, a Philadelphia judge speaking at the high school's semicentennial, observed:

> ...it should be the glory of the American citizen, without distinction, except of merit, that he had access to the richest stores of academic wealth. You may call this a dream; but republican institutions will never rest on an assured basis until it shall have passed into a reality.... When, then, the pioneers of public education added to the narrow range of study of the common schools the wider curriculum of the High School, they took but one step, perhaps a long one, in the right direction.(22)

As was noted at the beginning of the chapter, this devotion to merit was part of a broader ideology which asserted that America was a place where there was equal opportunity, open competition, and distribution of the greatest rewards to the most deserving. Given the thoroughly bourgeois character of the ideas which served as some of Central's core values, it is hardly surprising that the middle class should have been attracted to the school in such disproportionate numbers. Yet this middle class domination of the school itself suggests a second reason for Central's devotion to merit. Those few students from the working class who attended the high school could not have been unaware of its class nature. Their parents had to know that this was not a working class institution but an aggressively middle class one, and this was probably what they sought. The sliver of the working class that sent its boys to the high school is best conceived of as motivated by a desire for upward mobility and thus as being middle-class oriented to begin with. In cultural terms, therefore, Central was probably even more homogeneous than it was in terms of class origins. Under these circumstances it would be implausible to think that working class students would behave differently than middle class students at the high school. One would be as likely as the other to be culturally equipped to compete effectively for a diploma. Thus Central's homogeneity helped produce a setting in which meritocracy could flourish -- where students could freely compete, where rewards could be dispensed to the most worthy, where class background did not matter.

A third reason for Central's meritocratic character is to be found in the experience of the school's professors. These were men who for the most part experienced the high school first hand as students and excelled at the role, achieving the rare distinction of a high school diploma. They then most often worked their way up through the ranks in the public school system to grammar school master, finally winning promotion to the high school faculty as the result of their success in promoting many of their own students to the same school. The professors thus were high achievers who had learned to thrive in meritocratic settings as both students and teachers. Central's presidents were also men of high academic achievement. Presidents Bache, Hart, Thompson, Haney and Cornog all graduated first in their classes and Riché was valedictorian of his. As a result, presidents and professors both were among the strongest supporters of efforts to maintain and enhance the school's emphasis on merit.

This devotion by the men who governed the high school to a merit standard explains in part another reason for the success of such a standard, the school's considerable autonomy in the nineteenth century. These men jealously sought to preserve their freedom to run the school as the kind of meritocratic preserve in which they themselves had flourished. From 1838 to 1888 the faculty as a whole governed the school with remarkably little outside interference. Later, parliamentary rule was replaced by administrative rule via committees, departments and the president's office; yet through the person of President Thompson the school vigorously continued to defend its historic autonomy.

One reason that Central was permitted so much autonomy was its dominant position within the school system during much of its early history. In the years before the system came under bureaucratic control, it was the high school that set the standards for the lower schools. Its authority derived not from law or regulation but from its position as an object of emulation in the educational marketplace. Located at the vertex of the public school pyramid, sought by many students but achieved by only a few, Central's meritocratic internal structure was mirrored by its organizational setting. The hierarchy of merit among students within the high school was supplied and reinforced by a meritocratic hierarchy of grammar schools competing to gain admission for their students.

Yet the meritocracy within the doors of Central High School managed to outlive many of the conditions that had once supported it. The school's organizational power was undercut by admission quotas, the arrival of a superintendent and the end of the entrance exam. Its position atop the pyramid of schools was further damaged by the opening of the manual training schools and then the comprehensive high schools. In addition, late in the nineteenth century the board ended the hiring of professors who had climbed the school system's merit ladder and chose instead to hire inexperienced men with college credentials. Yet the evidence shows that in spite of all these changes, the merit principle continued to thrive at the high school. Grades provided just as powerful an explanation of a student's chances for graduation in 1910 as it did in the mid nineteenth century when the organizational conditions supporting meritocracy were stronger. Only in 1920 did the first sign of weakening appear, as grades fell faster than graduation rate and the beta for grades dropped to its lowest level.

During all the changes that affected Central High

School in the 80 years studies here, the unwavering persistence of its dedication to meritocracy was matched by only one other characteristic -- the solidly middle class origins and orientation of its students. Since this class was the primary bearer of the meritocratic ideology, one can conclude that its continuing support for the school was in large part due to Central's reputation for maintaining a rigorous academic standard. Even in practical terms, acquiring the credentials for middle class employment would not be of much use to the sons of the proprietary middle class unless it was understood by all that these credentials were dutifully earned. Thus the middle classes could be expected to use their influence to see that the high school's standard of merit was preserved.

A particularly outspoken element within the middle classes was the growing body of Central alumni. The first class to graduate from the high school organized an alumni association, which has been involved in vigorous activity in support of the school ever since. Dominated from the start by graduates, the alumni association spoke for men (like the early professors) who had entered at the bottom of Central's merit hierarchy and emerged at the top. With their number including men of prominence and position in the city, the alumni were a particularly effective as well as committed force for continuing the high school's meritocratic tradition.

While the focus of this section has been on why Central High School was meritocratic, the reference to the school's alumni raises the question of what the consequences were of Central's strict emphasis on merit. The answer is simple: the high school sent out into the community a large number of young men who knew from personal experience that meritocracy exists and that it works. Few of the other residents of the city would have had such an experience, for the simple reason that systems of merit rewards are in practice so often transmuted by class into systems of self-perpetuating rewards. But in at least one place a pure form of meritocracy did exist. During the 80 years covered, about 40,000 students struggled through it (if only for a brief time) and nearly 9,000 of these succeeded in reaching the top rung. Those who failed had to accept this outcome as a sign of inadequate ability while those who graduated could see themselves deserving of the honor. The graduates frequently went on to positions of importance within the city, and it would have been odd indeed if they had attributed their later successes to family background rather than personal ability. For at the high school they learned that background did not matter while ability did. To these men merit was not a hollow promise but a vital reality that was directly experienced early in life and then easily extrapolated to later events and to other people.

The high school's uniqueness for much of this period and its prominence for all of it led to an influence that extended beyond its circle of students. Central stood as Philadelphia's citadel of merit, enjoyed by some but visible to all. The message it broadcast to the general population was: you get what you deserve. And within its doors -- even if only there -- the message was confirmed.

TABLE 3.1

OCCUPATIONAL DISTRIBUTION OF HOUSEHOLD HEADS, CENTRAL HIGH SCHOOL, 1838-1900

	N	Class N	%	Class %
Proprietors	591		25.6	
Manufacturers	347		15.0	
Professionals	148		6.4	
Proprietary middle class		1086		47.0
White collar emp.	229		9.9	
Government employee	109		4.7	
Clerks	81		3.5	
White collar super.	63		2.7	
Employed middle class		482		20.8
Skilled working class		588		25.4
Unskilled working class		156		6.7
Total		2,312		99.9
Missing		400		

TABLE 3.2

OCCUPATIONAL DISTRIBUTION OF HOUSEHOLD HEADS, CENTRAL HIGH SCHOOL VS. PHILADELPHIA, 1880

	Central High Scl		Philadelphia		Index of Representativeness	
Proprietors	28.9		12.7		2.3	
Manufacturers	10.5		7.2		1.5	
Professionals	6.1		3.2		1.9	
Proprietary middle class		45.6		23.1		2.0
White collar employees	8.7		2.6		3.5	
Government employees	9.6		1.5		6.4	
Clerks	6.1		3.0		2.0	
White collar super.	2.6		0.5		5.2	
Employed middle class		27.2		7.6		3.6
Skilled working class		23.7		39.9		0.6
Unskilled working class		3.5		29.5		0.1
Total		100.0		100.1		
N		114		114,196		
Missing		16		27,911		

TABLE 3.3

CLASS DISTRIBUTION OF FAMILY HEADS OF CENTRAL HIGH SCHOOL STUDENTS, 1838-1920

(Percentage by year)

Class	1838-1840(a)	1850	1860	1870	1880	1890	1900	1910	1920	Ave. 1838-1920
Proprietary middle class	42.0	60.0	53.2	45.6	51.9	45.8	45.8	51.0	43.9	47.0
Employed middle class	12.7	12.7	18.1	14.1	27.2	20.2	24.8	23.5	20.0	20.8
Skilled working class	40.4	21.8	29.9	20.7	23.7	24.8	24.0	20.1	25.2	25.4
Unskilled working class	4.9	5.5	7.9	12.0	3.5	3.1	5.4	5.4	10.9	6.8
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number	205	55	127	92	114	258	516	353	595	2315
Missing & other	30	41	15	36	16	42	80	45	95	430

a. The number of proprietary middle class students is understated and the number from the skilled working class overstated for these early years because of the low degree of comprehensiveness of the business directories of the era. Many master artisans are thus incorrectly located among skilled workers.

TABLE 3.4

CLASS DISTRIBUTION OF PHILADELPHIA HEADS OF HOUSEHOLD, 1850-1880

(Percentage by year)

Class	1850	1860	1870	1880
Proprietary middle class	21.2	24.4	24.0	23.0
Employed middle class	3.3	4.6	5.7	7.6
Skilled working class	48.7	43.6	40.6	39.9
Unskilled working class	26.8	27.4	29.7	29.5
	100.0	100.0	100.0	100.0
Number	49,368	76,265	88,240	114,196

TABLE 3.5

INDEX OF REPRESENTATIVENESS

CENTRAL VS. PHILADELPHIA HEADS, 1850-1880(a)

Class	1850	1860	1870	1880
Proprietary middle class	2.8	1.8	2.2	2.0
Employed middle class	3.8	3.9	2.5	3.6
Skilled working class	0.4	0.7	0.5	0.6
Unskilled working class	0.2	0.3	0.4	0.1
Goodman and Kruskal's Tau(b)	.243	.137	.230	.215

Sources: Tables 3.3 and 3.4

a. Index (for a particular class and year) = % of Central heads divided by % of Philadelphia heads (from the same class and year).

b. This measure of association was calculated from tables consisting of the percentage class distributions of Central heads and non-Central Philadelphia heads for each year. High school attendance is the dependent variable, class the independent variable.

TABLE 3.6

CLASS DISTRIBUTION OF FAMILY HEADS OF CENTRAL HIGH SCHOOL STUDENTS, 1838-1920 WITH MASTER ARTISANS MOVED FROM PROPRIETARY MIDDLE TO SKILLED WORKING CLASS

(Percentage by year)

Class	1838-1840	1850	1860	1870	1880	1890	1900	1910	1920	Ave. 1838-1920
Proprietary middle class	39.0	41.8	26.8	40.2	40.4	42.6	38.0	43.1	32.9	38.3
Employed middle class	12.7	12.7	18.1	14.1	27.2	20.2	24.8	23.5	20.0	19.3
Skilled working class	43.4	40.0	47.2	33.7	28.9	34.1	31.8	28.0	36.2	35.9
Unskilled working class	4.9	5.5	7.9	12.0	3.5	3.1	5.4	5.4	10.9	6.5
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number	205	55	127	92	114	258	516	353	595	2315
Missing & other	30	41	15	36	16	42	80	45	95	430

Source: Table 3.3

TABLE 3.7

CLASS DISTRIBUTION OF PHILADELPHIA MALES, 1850-1920

WITH MASTER ARTISANS MOVED FROM PROPRIETARY MIDDLE TO SKILLED WORKING CLASS

(Percentage by year)

Class	1850	1860	1870	1880	1900	1910	1920
Proprietary middle class	15.4	16.8	16.1	15.3	13.3	12.6	11.3
Employed middle class	6.7	7.5	9.0	10.1	16.4	18.1	20.5
Skilled working class	52.8	46.8	43.7	42.2	37.3	27.2	29.5
Unskilled working class	25.1	28.9	31.2	32.4	33.0	42.1	38.7
	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number	55	127	92	114	516	353	595
Missing & other	41	15	36	16	80	45	95

TABLE 3.8

PERCENTAGE OF HEADS IN EACH CLASS DIVIDED BY PERCENTAGE OF MALES, PHILADELPHIA: 1850-1880

Class	1850	1860	1870	1880
Proprietary middle class	1.38	1.45	1.49	1.50
Employed middle class	.49	.61	.63	.75
Skilled working class	.92	.93	.93	.95
Unskilled working class	1.07	.95	.95	.91

Sources: Tables 3.4 and 3.7

TABLE 3.9

INDEX OF REPRESENTATIVENESS(a)

CENTRAL HEADS VS. PHILADELPHIA MALES, 1850-1920

(WITH MASTER ARTISANS MOVED FROM PROPRIETARY MIDDLE TO SKILLED WORKING CLASS)

Class	1850	1860	1870	1880	1900	1910	1920
Proprietary middle class	2.7	1.6	2.5	2.6	2.9	3.4	2.9
Employed middle class	1.9	2.4	1.6	2.7	1.5	1.3	1.0
Skilled working class	0.8	1.0	0.8	0.7	0.9	1.0	1.2
Unskilled working class	0.2	0.3	0.4	0.1	0.2	0.1	0.3
Goodman and Kruskal's Tau(b)	.142	.094	.106	.185	.170	.230	.134

Sources: Tables 3.4 and 3.5

a. Index (for a particular class and year) = % of Central heads divided by % of Philadelphia males (from the same class and year).

b. This measure of association was calculated from tables consisting of the percentage class distributions of Central heads and non-Central Philadelphia males for each year.

TABLE 3.10

CLASS DISTRIBUTIONS FOR CENTRAL MANUAL TRAINING SCHOOL AND CENTRAL HIGH SCHOOL HEADS OF FAMILY, 1900

Class	Central Manual	Central High
Proprietary middle class	38.5%	45.8%
Employed middle class	32.6	24.8
Skilled working class	20.5	24.0
Unskilled working class	8.4	5.4
	100.0	100.0
Number	190	516
Missing & other	39	80

663

TABLE 3.11

GRADUATION RATE AT CENTRAL HIGH SCHOOL
BY YEAR, 1838-1920

Year	% Graduated
1838-1840	34 1
1850	23.5
1860	14.1
1870	22.7
1880	25.4
1890	24.0
1900	27.5
1910	33.8
1920	25.4

Average: 26.9

TABLE 3.12

MEAN CLASS DISTRIBUTIONS FOR CENTRAL HIGH SCHOOL ENTRANTS AND GRADUATES, WITH GRADUATION RATES BY CLASS: 1838-1920

Class	Entrants	Graduates	Grad Rate
Proprietary middle class	47.0	49.6	29.1
Employed middle class	20.8	19.3	25.5
Skilled working class	25.4	24.5	26.5
Unskilled working class	6.8	6.6	26.6
	100.0	100.0	100.0
Number	2,315	637	
Missing & other	398	94	23.6
Total (inc. missing)	2,713	731	26.9

TABLE 3.13

CLASS DISTRIBUTIONS BY YEAR FOR CENTRAL HIGH SCHOOL ENTRANTS AND GRADUATES WITH GRADUATION RATES BY CLASS, 1838-1920

	1838-1840			1850			1860		
Class	Entrants	Grads	Rate	Entrants	Grads	Rate	Entrants	Grads	Rate
Proprietary middle class	42.0	43.7	36.0	60.0	72.7	24.2	44.1	56.1	16.1
Employed middle class	12.7	12.7	34.6	12.7	9.1	14.3	18.1	18.8	13.0
Skilled working class	40.4	36.6	31.3	21.8	18.2	16.7	29.9	18.8	7.9
Unskilled working class	4.9	7.0	50.0	5.5	0.0	0.0	7.9	6.3	10.0
	100.0	100.0		100.0	100.0		100.0	100.0	
Number	205	71		55	11		127	16	
Missing & other	41	13	31.7	30	9	30.0	15	4	26.7
Rate (inc. missing and other)			34.1			23.5			14.1

TABLE 3.13 (cont.)

	1870			1880			1890		
Class	Entrants	Grads	Rate	Entrants	Grads	Rate	Entrants	Grads	Rate
Proprietary middle class	53.2	56.6	26.5	45.6	53.3	30.8	51.9	48.5	22.4
Employed middle class	14.1	4.3	7.7	27.2	26.7	25.8	20.2	22.5	26.9
Skilled working class	20.7	21.7	26.3	23.7	16.7	18.5	24.8	25.8	25.0
Unskilled working class	12.0	17.4	36.4	3.5	3.3	25.0	3.1	3.2	25.0
	100.0	100.0		100.0	100.0		100.0	100.0	
Number	92	23		114	30		258	62	
Missing & other	36	6	16.7	16	3	18.8	42	10	23.8
Rate (inc. missing and other)			22.7			25.4			24.0

TABLE 3.13 (cont.)

	1900			1910			1920		
Class	Entrants	Grads	Rate	Entrants	Grads	Rate	Entrants	Grads	Rate
Proprietary middle class	45.8	51.4	32.2	51.0	53.0	33.3	43.9	44.9	28.0
Employed middle class	24.8	18.9	21.9	23.5	23.9	32.5	20.0	19.6	26.9
Skilled working class	24.0	24.3	29.0	20.1	20.4	32.4	25.2	24.5	26.7
Unskilled working class	5.4	5.4	28.6	5.4	2.7	15.8	10.9	11.0	27.7
	100.0	100.0		100.0	100.0		100.0	100.0	
Number	516	148		353	113		595	163	
Missing & other	80	16	20.0	43	21	48.8	95	12	12.6
Rate (inc. missing and other)			27.5			33.8			25.4

TABLE 3.14

MULTIPLE CLASSIFICATION ANALYSIS OF GRADUATION RATE USING GENERAL SAMPLE, 1850-1920

Graduation Rate (grand mean): 27%

FACTORS	N	Mean % after Adjustments	Beta
Class			
Proprietary middle	926	28	
Employed middle	420	25	
Skilled working	465	28	
Unskilled working	139	25	
Missing & other	236	26	.03
Grammar School Frequency			
Over 50	233	31	
30 to 49	294	29	
20 to 29	437	32	
10 to 19	576	22	
1 to 9	687	26	.09***
Age at Admission			
12 or less	59	51	
13	384	35	
14	828	30	
15	581	20	
16	261	17	
17 or more	113	25	.16***
High Grades			
No high grades	1801	16	
Some high grades	426	73	.50***
Cohort			
1850	85	14	
1860	142	12	
1870	128	14	
1880	124	18	
1890	296	26	
1900	584	35	
1910	273	26	
1920	595	30	.16***

N = 2227 (missing = 240)

TABLE 3.14 (cont.)

R squared = .314
R squared (adjusted) = .307
R squared (adj) without grades = .081
R squared (adj) due to grades alone = .226

* = significant at the .05 level
** = significant at the .01 level
*** = significant at the .001 level

TABLE 3.15

MULTIPLE CLASSIFICATION ANALYSES OF GRADUATION RATE BY COHORT USING GENERAL SAMPLE, 1850-1920

	Betas								
	1850	1860	1870	1880	1890	1900	1910	1920	Total
Class	.28	.11	.11	.08	.11	.16**	.09*	.04	.03
School freq.	.25*	.15	.18	.22	.08***	.33***	.08	.09	.09***
Age admitted	.37***	.20*	.23**	.31***	.12**	.23***	.09	.22***	.16***
High grades	.45***	.47***	.53***	.57***	.71***	.48***	.54***	.38***	.50***
Cohort	--	--	--	--	--	--	--	--	.16***
R squared	.458	.340	.414	.479	.539	.456	.319	.224	.314
R sq. (adj.)	.349	.267	.341	.416	.516	.443	.282	.205	.307
Number	85	142	128	130	300	596	273	595	2227

* = significant at .05 level
** = significant at .01 level
*** = significant at .001 level

TABLE 3.16

MULTIPLE CLASSIFICATION ANALYSIS OF GRADUATION RATE USING CENSUS SAMPLE, 1850-1900

Graduation Rate (grand mean): 27%

FACTORS	N	Mean % after Adjustments	Beta
Class			
Proprietary middle	325	31	
Employed middle	150	19	
Skilled working	140	27	
Unskilled working	42	17	
Missing & other	63	34	
			.12*
Birthplace of Family Head			
U.S.	504	27	
Ireland	75	24	
Germany	66	20	
Britain	24	23	
Russia	28	32	
N. Europe & other	23	48	
			.10***
Siblings (birth order; working or dependent siblings)			
Youngest; working	86	26	
Youngest; dependent	42	14	
Middle; working	157	26	
Middle; dependent	121	27	
Oldest	248	31	
Only child	66	24	
			.09**
High Grades			
No high grades	599	17	
Some high grades	121	78	
			.52***
Cohort			
1850	53	9	
1860	89	14	
1870	96	16	
1880	94	18	
1900	388	37	
			.25***

COVARIATES	Raw Regression Coefficient
School Frequency	.002**
Sex of Head	.194***
Age at Admission	-.073***

TABLE 3.16 (cont.)

N = 720 (missing = 94)

R squared = .417
R squared (adjusted) = .401
R squared (adj) without grades = .170
R squared (adj) due to grades alone = .231

* = significant at .05 level
** = significant at .01 level
*** = significant at .001 level

TABLE 3.17

MULTIPLE CLASSIFICATION ANALYSES OF GRADUATION RATE BY COHORT USING CENSUS SAMPLE, 1850-1900

	Betas					
	1850	1860	1870	1880	1900	Total
Class	.31	.11	.17	.06	.22**	.12*
Birthplace	.28	.15	.22***	.07	.16***	.10***
Siblings	--	.20	.19	.18	.18***	.09**
School Frequency	.13	.35*	.15	.19	.26***	--
High Grades	.39***	.66***	.58***	.59***	.47***	.52***
Cohort	--	--	--	--	--	.25***
Male Head	.256	.080	.080	-.025	.241***	.194***
Age	-.091	-.024	-.080**	-.046	-.103***	-.073***
School Freq.	--	--	--	--	--	.002**
R squared	.433	.578	.569	.448	.512	.417
R squared (adj)	.253	.476	.475	.325	.489	.401
Number	55	89	96	94	388	720

Table 3.17 (cont.)

* = significant at .05 level
** = significant at .01 level
*** = significant at .001 level

TABLE 3.18

MULTIPLE CLASSIFICATION ANALYSIS OF GRADUATION RATE USING PERFORMANCE SAMPLE, 1910 and 1920

Graduation Rate (grand mean): 33%

FACTORS	N	Mean % after Adjustments	Beta
Class			
Proprietary middle	328	34	
Employed middle	154	30	
Skilled working	174	35	
Unskilled working	63	35	
Missing & other	41	25	.06
Elementary School Terms per Grade Level			
Less than 1	85	37	
1	469	35	
1 to 1.15	81	31	
1.15 and over	124	26	.08***
Grade Point Average			
A	11	89	
B+	56	87	
B-	169	60	
C+	279	27	
C-	181	7	
D	49	6	
F	15	8	.54***
Absences per Term			
None	118	23	
1 through 3	233	33	
3 through 7	204	39	
7 through 13	131	37	
more than 13	73	24	.13***
Cohort			
1910	270	29	
1920	489	35	.07*

COVARIATES	Raw Regression Coefficient
Latenesses per Term	.011
School Frequency	.003*

TABLE 3.18 (cont.)

N = 760 (missing = 326)

R squared = .326
R squared (adjusted) = .309
R squared (adj) without grades = .092
R squared (adj) due to grades alone = .217

* = significant at .05 level
** = significant at .01 level
*** = significant at .001 level

TABLE 3.19

MULTIPLE CLASSIFICATION ANALYSIS OF HIGHEST GRADE LEVEL USING PERFORMANCE SAMPLE, 1910 and 1920

Highest Grade Level (grand mean): 4.73

FACTORS	N	Mean % after Adjustments	Beta
Class			
Proprietary middle	321	4.68	
Employed middle	154	4.82	
Skilled working	171	4.79	
Unskilled working	62	5.11	
Missing & other	41	4.00	
			.08*
Elementary School Terms per Grade Level			
Less than 1	82	4.90	
1	460	4.93	
1 to 1.15	81	4.43	
1.15 and over	124	4.06	
			.12***
Grade Point Average			
A	10	7.34	
B+	55	7.66	
B-	166	6.28	
C+	275	4.50	
C-	178	3.54	
D	49	2.21	
F	15	1.80	
			.54***
Absences per Term			
None	116	3.49	
1 through 3	230	5.05	
3 through 7	199	5.09	
7 through 13	129	5.11	
more than 13	73	4.02	
			.22***
Cohort			
1910	260	4.43	
1920	488	4.89	
			.08***

COVARIATES	Raw Regression Coefficient
Latenesses per Term	.239***
School Frequency	.025**

TABLE 3.19 (cont.)

N = 748 (missing = 338)

R squared = .430
R squared (adjusted) = .416
R squared (adj) without grades = .205
R squared (adj) due to grades alone = .211

* = significant at .05 level
** = significant at .01 level
*** = significant at .001 level

FOOTNOTES

1. Thomas Dunlap, "Introductory Address of the Commencement of Central High School, February 12, 1851" (Philadelphia: Board of Controllers, 1851), pp. 15-16; emphasis in the original.

2. Alexander Dallas Bache, "Address Before the Alumni Association of Central High School, February 10, 1859" (Philadelphia: Alumni Association, 1859), p. 7.

3. Before 1850 the manuscript census lacks individual data; 1890 records were lost in a fire; 1910 manuscripts were released too late be used in this project, and 1920 manuscripts are not yet available.

4. I have included government workers in the employed middle class regardless of whether the specific job was blue collar or white collar in character. The reason is that in the nineteenth and early twentieth centuries government workers of all types were largely buffered against the insecurities of working class life in much the same way as middle class workers were.

5. These two middle classes correspond quite closely in practice with the old middle and new middle classes used by such social historians as Robert Wiebe and Mary Ryan, although the definition of their classes is quite different from mine. The old middle class is seen as having consisted of those occupational groups which constituted the middle class prior to the advent of industrial capitalism and which found their positions threatened by its rise, while the new middle class consisted of those groups that arose with and prospered under industrial capital. Since the former were mostly proprietors and the latter mostly employees, the two sets of categorizations are the same, with only one exception: professionals are included in the new middle class by Wiebe and Ryan while I place them in the proprietary group.

I wish to argue that my class system is on theoretically firmer ground than its generally similar alternative. The old-new middle class distinction is not defined in theoretical terms but in empirical terms. Apart from the fact that they both flourished under industrialization, professionals had little in common with the white collar employees who constituted the bulk of the new middle class. By contrast, I define the difference between the two middle classes as a function of the social relations of production, distinguishing those who work for themselves from those who work for someone else. Moving the professionals to the old middle class and redefining it as a self-employed class permits a sharper interpretation of the meaning of both this class and its employee counterpart. Robert Wiebe, The Search for Order, 1877-1920 (New York: Hill and Wang, 1967), pp. 111-32; Mary P. Ryan, Cradle of the Middle Class: The Family in Oneida County, New York, 1790-1865 (Cambridge: Cambridge University Press, 1981), pp. 152-3.

6. This year was chosen because it is midway through the period under examination and because data on the distribution of household heads in the city are available for that year.

7. See footnote on Table 3.3.

8. The large majority of Central heads were male.

9. Other studies which deal with high school attendance have found signs of both stability and instability of class distribution. Troen reports stable class background among the students at the high school in St. Louis between 1860 and 1880. But according to Perlmann, from 1900 to 1925 in Providence, the middle class proportion of students rose at the Classical High School, declined at the comprehensive and technical (manual training) high schools and dropped sharply at the English high school. Selwyn K. Troen, The Public and the Schools: Shaping the St. Louis System, 1838-1920 (Columbia, Mo.: University of Missouri Press, 1975), p. 120; Ari Joel Perlmann, "Education and Social Structure of an American City: Social Origins and Educational Attainments in Providence, R.I. 1800-1925 (Ph.D dissertation, Harvard University, 1980), p. 102.

10. Michael B. Katz, The Irony of Early School Reform: Educational Innovation in Mid Nineteenth Century Massachusetts (Cambridge: Harvard University Press, 1968), p. 271.

11. Troen, The Public and the Schools, p. 232.

12. I have excluded the girls' commercial high school from these figures. Perlmann, "Education and Social Structure," p. 102.

13. George S. Counts, The Selective Character of American Secondary Education (New York: Arno Press, 1969),

p. 26.

14. Michael B. Katz and Ian E. Davey, "Youth and Early Industrialization in a Canadian City," in Turning Points: Historical and Sociological Essays on the Family, ed. John Demos and Sarane Spence Boocock, American Journal of Sociology Supplement 84 (Chicago: University of Chicago Press, 1978) pp. s81-s119; Katz and Davey, "School Attendance and Early Industrialization in a Canadian City," History of Education Quarterly 18 (Fall 1978): pp. 271-293.

15. It should be recalled that 1890, 1900 and 1920 are fractional samples which are reported here and elsewhere in this chapter in weighted form. The weights are 2.0, 4.0 and 1.67.

16. The most thorough discussion of MCA can be found in Frank M. Andrews, et al, MCA: A Report on a Computer Program for Multiple Regression Using Categorical Predictors (Ann Arbor: Survey Research Center, University of Michigan, 1973). The actual analysis was performed by means of the Statistical Package for the Social Sciences (SPSS), and the discussion of the technique in the SPSS manual is quite helpful. Normal Nie et al, SPSS: Statistical Package for the Social Sciences, 2nd ed. (New York: McGraw Hill, 1975), pp. 409-410, 416-418. For an extended application in a study of school attendance, see Carl F. Kaestle and Maris A. Vinovskis, Education and Social Change in Nineteenth Century Massachusetts (Cambridge: Harvard University Press, 1980), pp. 88-99. For an example of use in a mobility study, see Peter M. Blau and Otis Dudley Duncan, The American Occupational Structure (New York: Free Press, 1964), pp. 128-140.

17. It is interesting to note that the arrival of the quota system of admissions in 1868 had a major impact on the school frequency variable but did not lessen its impact on graduation rate. Before 1870 most students came from a few high frequency schools, but from 1870 on they came primarily from a large number of different low frequency schools. Yet in 1880, 1900 and 1910 the high frequency category still had the highest graduation rate.

18. Katz, Doucet and Stern found that the sons of widows were also the least likely to attend school in the first place. Michael B. Katz, Michael Doucet and Mark Stern, The Social Organization of Early Industrial Capitalism (Cambridge: Harvard University Press, 1982), p. 271.

19. Perlmann, "Education and Social Structure," pp. 202-230.

20. Perlmann found that youngest children had the highest likelihood of attending high school in Providence, though he gives no figures for graduation. *Ibid*., pp. 353-4.

21. Board of Public Education (Philadelphia), *Annual Report*, 1869, p. 28; emphasis in the original.

22. Semi-Centennial Committee, *The Semi-Centennial Celebration of the Central High School of Philadelphia* (Philadelphia: Semi-Centennial Committee, 1888), pp. 24-25.

CHAPTER IV

MEN OF AFFAIRS, MEN OF LETTERS: FROM PRACTICAL TO ACADEMIC CURRICULUM

The history of Central High School is clearly divided into two periods which are separated by the watershed events of the late 1880s. The school's role within the system, its mode of internal governance, the social and status characteristics of its teachers and the nature of its curriculum were all significantly different in the second period compared with the first. The change was particularly dramatic for curriculum. Central's first 50 years were marked by a strong commitment to uniform practical education, oriented toward commercial life rather than college; but in 1889 the school abandoned this policy and adopted a differentiated college-preparatory curriculum. It will be my aim in this chapter to explore the character of these two curricula and the reasons for the sudden change from one to the other.

1. PRACTICAL EDUCATION, 1838-1889

Bache Administration

The key to the long domination of practical education at Central High School is to be found in the person of Alexander Dallas Bache. For it was Bache who reorganized the school's curriculum in a practical vein, who presided over the implementation of this program as the school's first principal and whose life and work embodied the highest ideals of what practical education meant.

Bache's great grandfather was Benjamin Franklin, and his career could readily be interpreted as a highly successful effort to develop and integrate two of his famous ancestor's central concerns -- practical science and practical education. First, Bache the scientist: Initially educated at a classical grammar school in Philadelphia headed by a man whom he later hired to teach at Central, Bache moved on to the U.S. Military Academy where he graduated at the top of his class in 1825. West Point was the first technical college in the country and at the time its curriculum strongly emphasized civil engineering.(1) In 1828 he was appointed professor of natural philosophy and chemistry at the University of Pennsylvania and immediately plunged into Philadelphia's thriving scientific life, much of which revolved around not the university but the newly formed Franklin Institute. This organization, one of many workingmen's lyceums to develop around the country in 1820s, was devoted to the marriage of scientific and mechanical pursuits as practiced by Franklin himself.

What was different about this lyceum was that it was so much more successful than most, both as a sponsor of practical scientific research and as a general promoter of technological development. And no small part of this success was due to Bache, who dominated its scientific activities as long as he was in Philadelphia. He lectured and read papers at the institute on a wide variety of topics including meteorology, astronomy and the earth's magnetism. But the research that brought him first to national attention was a series of experiments between 1831 and 1835 which uncovered the cause of steam boiler explosions, a problem which at the time was seriously restricting the use of steam engines.(2)

His experimental work at the institute is revealing about what being a scientist meant to Bache. First, it meant applying scientific methods to practical -- frequently industrial -- problems. Bache, in other words, was what in the twentieth century would be called an engineer. This is not surprising if one considers that he was trained as an engineer at West Point and spent the last 25 years of his active life as the head of the U.S.

Coast Survey. But his concern with the practical was always tempered by professionalism. One of his associates in the steam boiler study was Matthias Baldwin, not a scientist but an entrepreneur who managed to expand his small machine shop into the giant Baldwin Locomotive Works. But while Bache frequently worked with entrepreneurs he never became one, instead confining himself to the role of scientific expert. In fact he spent much of his energy on the effort to professionalize science in this country. In 1836 he reorganized the Journal of the Franklin Institute and made it into a professional journal of technology with national influence.(3) In 1840 he drew together his professional associates into an organization known as the Association of American Geologists, which eight years later became the American Association for the Advancement of Science.(4)

Bache's professionalism points to a second important quality of his scientific career: it was decisively public in character. He was educated as a scientist at public expense. He always published his scientific results instead of restricting access to them via patent and milking them for private gain. The two schools he headed, Girard and Central, were of an intensely public character. His steam boiler study was one of the earliest cases of large-scale federally-funded research. And finally he closed his career in Washington as the head of the federal government's major agency employing scientists, along the way helping to incorporate the Smithsonian Institution.

Bache the scientist as he emerges from this review was thoroughly practical and public-spirited, and so was Bache the educator: In 1831 he was appointed chairman of the Franklin Institute's Committee on Instruction and he immediately expressed concern about the inadequacy and inappropriateness of the institute's educational effort. At the time it was supporting two specialized schools (one in drawing and one in mathematics) out of a sense that technical education should be available as an alternative to the prevailing classical schooling. In 1826 the institute inaugurated a full-fledged high school after a considerable amount of public urging by such education-minded reformers as publisher Matthew Carey and school-law author Samuel Breck. This school was an attempt to carry out in practice the educational ideas of Benjamin Franklin expounded in this "Proposals Relating to the Education of Youth in Pennsylvania."(5) As established it offered students a three year course and a wide range of curriculum choices including "English", classical, modern languages, and mathematics and practical sciences. Three years later, however, the institute severed its connection with the school. But Bache set out to expand the mathematics school that was still in operation to include a full English (as opposed to classical) program of studies. Like the earlier high school it was intended to provide broad training that would be useful in later life, but unlike the other Bache's was a night school aimed specifically at apprentices. Not very successful in drawing students, it died several years later.(6)

Bache's next educational venture began in 1833 when he was selected to join the first board of trustees (headed by Nicholas Biddle) of the proposed Girard College. Association with an orphanage would seem far removed from his major interests; however, as Stephen Girard's will made clear, this was to be no ordinary orphanage but an academy of the useful arts. Girard's words hit close to Bache's own educational sympathies:

> They shall be instructed in the various branches of a sound education, comprehending reading, writing, grammar arithmetic, geography, navigation, surveying, practical mathematics, astronomy, natural, chemical, and experimental philosophy, the French and Spanish languages (I do not forbid, but I do not recommend the Greek and Latin languages) -- and such other learning and science, as the capacities of the several scholars may merit or warrant: I would have them taught facts and things, rather than words or signs...(7)

Bache's chance to explore the full possibilities of providing a system of practical education came in 1836 when the trustees named him the school's first president and sent him on a two-year tour of European schools. A year after his return he published a 600 page report which is remarkable both for its scientific thoroughness and for what it shows about his emerging views as an educator.(8) It undoubtedly impressed the high school committee of the board of controllers, who in November of the same year asked him to take over Central High School.

He drew up a plan of reorganization for the high school in December of 1839 which drew heavily on his report, but significantly the examples he gave all came from the German Gymnasium and Realschule. He could not help noting, however, "It is remarkable that a plan founded upon the same leading idea which gave rise to the the establishment of 'real schools', was proposed by Dr. Franklin, as the basis of the Philadelphia Academy."(9) He saw the high school as having not one purpose but three:

> First, to afford a higher elementary instruction than can be had in the other public schools: Second, to furnish an education preparatory to the pursuits of commerce, manufactures, and the useful arts: Third, as supplementary to the former two objects, the school is expected to prepare youths from the public schools whose parents may desire a classical course for them, for entrance into college...(10)

Each of these purposes translated in turn into a distinct course of study, which he labeled respectively as elementary or English (a two-year course for those who had to go to work early on), principal (a four year course directed toward business not college) and classical (for the college bound only). His preferences here were revealed in his choice of words. The principal course was intended to be just that, especially when one sees from the actual studies in each course that the elementary program was essentially a truncated version of it. This left the classical course, decidedly "supplementary" to the others, which was included only because some "parents may desire" it. The same non-classical emphasis is shown by the character of the four departments Bache added to the school, which included: French; mental, moral and political science; natural philosophy; and writing and drawing.

It is clear that Bache sought to promote practical education. What this phrase meant for him and for the early Central High School presidents was to prepare students for life rather than for more schooling. More particularly it meant preparation for business, or as he put it, "commerce, manufactures, and the useful arts" -- a listing that includes almost everything except the learned professions, the only occupations for which classics and college were required at the time. This is why Bache designed his curriculum around the principal course, because he saw it as meeting the needs of most boys.

Yet precisely how it would do this is puzzling at first. Consider the subjects required of students in this course: English; history; French; mathematics; natural philosophy; geography; natural history; mental, moral and political science; writing; and drawing. (See Figure 4.1.) Not one of these could be construed as vocational. This observation is critically important: for Bache, practical education was intended "to provide a liberal education for those intended for business life"(11) -- not to train them in vocational skills.

Bache's concern with practical education spilled over into his pedagogy as well. One reflection of it was his emphasis on, as Girard put it, "things" rather than "words." This meant orienting instruction as much as possible around applications, demonstrations and laboratories -- particularly in the sciences. The concrete manifestation of this tendency was found in Bache's great concern with "philosophical apparatus" or scientific equipment. He stressed the importance of such equipment throughout his Report on Education in Europe and in each of his annual reports at Central. In fact it remained a primary focus of the reports of his successors for the rest of the practical period, when hardly a year went by without the president listing the "apparatus" added to the school's collection. Emblematic of the continuing concern over equipment was the school's astronomical observatory, which was built into Central's first home and moved in turn into each of its subsequent buildings.

This attention to objects was tied to a shift from a formal textbook-and-recitation pedagogy to one involving "conversational lectures" in which the goal was to win the student's interest and through this his understanding rather than simply to drill him on the contents of a book.(12) Bache also saw physical education as a natural extension of these teaching methods -- doing rather than memorizing -- and was instrumental in getting the board to buy extra land for a playground.(13)

Bache's curriculum and pedagogy placed him squarely in the company of those mid-century Massachusetts reformers whom Katz has characterized as having "soft-line" educational principles.(14) Like Horace Mann, Bache was opposed to the educational practices of the "hard-line" educators who favored the classics, rote-learning and recitation, stern discipline and emulation. The latter technique involved stimulating students into continual competition by means of a variety of elaborate rewards and punishments. In his report on European schools, Bache attacked over-reliance on emulation more than any other educational practice, noting that it was artificial, harmful to student health and less effective than softer methods.(15)

I would like to suggest that Bache had the same view of practicality in education as he did in science. As a scientist he consistently shaped his research interests to meet the needs of industry and government for advanced technology. He sought not to be a lonely theorist of pure science but a socially involved engineer looking for effective answers to real problems. Enthusiastically a man of his age, he accepted its premises and resolutely attacked the technical deficiencies that retarded its progress. Yet at the same time he never allowed himself to be swallowed by it. He promoted the interests of private enterprise as diligently as anyone but he never "hired on," preferring instead the roles of expert consultant and public servant. The reason perhaps is that he placed too much importance on both professional autonomy and republican principle to abandon himself in the service of wage labor.

As an educator, then, Bache promoted a course of study that was oriented toward the real activities and concerns of his times without simply reflecting them. This meant playing down dead languages and encouraging modern ones, but above all it meant promoting the natural, physical and social sciences. These subjects would not be useful in the narrow sense of job training; instead they were designed to orient students toward the contemporaneous world, to teach them in a general way how it works, to develop in them a sense of their general competence to influence its future and to instill within them a moral anchor.

Hart Administration(16)

The general pattern set by Bache -- a practical curriculum and a soft pedagogy -- was retained by his successors during this first period in Central's history. What changes they made tended on the whole to increase both the practicality of the curriculum and the "softness" of the pedagogy over the years. John Hart followed Bache as principal, and the nature of his course of study can be determined from the chart in Figure 4.2 (photocopied from his 1850 annual report). The columns on the chart show the subjects taught by each professor while the rows show the subjects taken by each division or grade level. Grade levels are shown in half-year increments with H representing the first term of freshman year and A the last term of senior year. Subjects designed only for the principal course are identified by a "pr." in parentheses, while classical subjects are marked by "cl." and English subjects by "Eng."

One conclusion that can be drawn from this chart is that Hart required a larger number of languages than his predecessor, adding Spanish, German and Anglo-Saxon to the curriculum. But the difference is not as significant as it seems since Bache himself had planned to add at least one more foreign language.(17) A second conclusion suggested by this chart is that Hart introduced a number of subjects to Bache's course of study which pushed the school's center of gravity farther in the practical direction. Consider such required subjects as navigation, surveying, bookkeeping and phonography (shorthand by the Pitman method). All four of these subjects, and particularly the last two, are practical to the point of vocationalism. Bache had deliberately eschewed training students in specific job skills, but Hart was more willing to err on the side of vocationalism than on the side of cultural studies. He stated his views in the same annual report from which the chart was drawn:

> It was very early a matter of anxiety with the Controllers to avoid the error, not of over educating the pupils, but of so educating them as to give them a distaste for business. It was feared that the gift of intellectual culture would be accompanied with a disrelish for anything but intellectual employment, if not with dislike of employment altogether. Such, without doubt, is often the result of education, misdirected. The tendency in this respect of the course of instruction prescribed by the Controllers, would seem to be of the most encouraging kind. The alumni of the High School are already found scattered through the city in almost every walk of useful industry... I deem it not improper to add in this connection, that many of our leading mechanics, manufacturers, merchants and others, are in the habit of sending to the school whenever they are in want of desirable young men to be trained to business.(18)

Hart's position on languages and on practical education can both be clarified by reference to Table 4.1, which presents a standardized comparison of courses of study across administrations. Individual subjects are classified in the table according to categories which reflect as much as possible the arrangement of subjects by column used by the principals in their curricular charts. There are seven such categories: classical languages; modern languages; English, including literature, composition, elocution and rhetoric; history, which includes philosophy, mental, moral and political science and political economy; science and mathematics; vocational subjects, which are defined as those which teach specific job skills as opposed to general intellectual capabilities; and other, the largest component of which during the nineteenth century was drawing. The total number of years of study required for each category of subjects in each of six different administrations were determined and these years are represented in Table 4.1 as percentages of the total course-years in a particular curriculum.

When Hart and Bache are compared using Table 4.1 it is clear that although the former multiplied the number of languages at the schools, he made no change in the amount of time devoted to languages in total. In fact in these terms Hart's only major change was to cut science courses in order to introduce vocational subjects.

A third conclusion that can be drawn from Hart's course of study (Figure 4.2) is that a large majority of the required classes were the same for all students no matter which of the three programs they were enrolled in. The English curriculum consisted of the first two years of the principal course with the substitution of science and history classes for modern languages. Meanwhile the classical course was identical to the principal course over all four years except that in this case Latin and Greek replaced French and Spanish. Bache's course of study (Figure 4.1) reveals a similar pattern. This finding underscores the extent to which Bache and Hart were committed to the principal course. For in fact Central did not offer three distinct curricula but one curriculum with two minor variations. The preferences of students matched those of the principals in this respect as well. In 1850 over half were enrolled in the principal course, with a third in classics and the rest in English. (See Table 4.2.)

The de facto uniformity of Central's curriculum in the school's early years makes the abandonment of the classical and English variations in 1854 and 1856 appear less as a dramatic shift in policy than as a natural culmination of the school's founding ideology of practical education. Bache only included the classical program in order to meet the demand of a few parents, and the board agreed in order to make Central and thus the public school system more attractive to parents of the college bound.

But once the school system was well established, this type of costly selective inducement was less needed and was perhaps even counter-productive. By the 1850s the high school had less to fear from middle class apathy than it did from working class opposition, and no issue was used to symbolize the school's putative elitism more vividly than the teaching of classical languages at public expense to a small group of well-to-do pre-professionals. Best to stand on the ground that was ideologically firmest and pursue the goal that Hart as well as Bache always considered primary: "not to educate boys above their business, but for it."(19)

Hart's enthusiasm for fitting boys to the commercial life was tempered by a concern for embedding within them a firm moral anchor. Reflecting his training as a Presbyterian minister, Hart turned Bache's system of discipline into a full-fledged program of moral instruction. Bache's mode of discipline followed from his soft pedagogy by shunning methods such as extreme emulation, harsh punishment, public reprimands and punitive assignments in favor of "counsel or admonition by a professor" and the giving of demerits.(20) His successor elaborated and refined this system to the point where the disciplinary method became a fine-tuned machine for molding the character of Central students. As Hart described it:

> Students not previously accustomed to a mild method of discipline sometimes mistake it at first for want of firmness. But such mistakes are soon rectified. The whole machinery of the school, like an extended piece of net-work, is thrown over and around him, and made to bear upon him, not with any great amount of force at any one time or place, but with a restraining influence just sufficient, and always and every where present. Some of the most hopeless cases of idleness and insubordination that I have ever known have been found to yield to this species of treatment. Some of the most hopeful students now in the school, some of the distinguished ornaments of the classes who have graduated, were once for months together on special trial.(21)

The system functioned in the following manner: Each student was evaluated twice in every class every day, once for scholarship (on a one to ten scale) and again for conduct (with the possible application of demerits, scaled from one to five). At the end of each month the student's scholarship average was computed on a 100 point scale and double the sum of his demerits was deducted to produce his monthly average. The latter was averaged against the final examination grade to produce the student's term grade. Hart proudly estimated in an earlier report that each student was independently evaluated for either scholarship or conduct 1,600 times every term.(22) This was indeed "an extended piece of net-work," exactly the kind of pervasive surveillance system promoted by penitentiary and asylum reformers of the same period.(23) The purpose of course was to instill permanent self control -- as opposed to temporary restraint "by means of special stimulants and terrors known only at school" -- and thus help prepare the student for "the real accountabilities of life."(24)

Hart described the character-molding aim of his pedagogy in an earlier report:

> Where fear is the only motive appealed to, and instant punishment follows every offense, obedience and quiet may undoubtedly be secured. But conscience will not be educated. No habit of self-control will be cultivated... For the more serious and lasting consequences, the pupil is trained to look forward to the end of the quarter, the end of the term, the end of the year, the end of the course. At each of these points, he is made to feel the consequences of every neglected lesson, of every misspent hour. These consequences are found to follow with almost the certainty of natural laws. The young man who has grown up in the habit of regarding such consequences and of governing his conduct by an accountability yet future, has already within him the elements of successful resistance to most of the temptations of life.(25)

Thus Hart sought to prepare his boys for early entry into the city's business life while at the same time imbuing them with sufficient self-control that they could successfully resist the manifold temptations of that life.

The Consequences of a Practical Education

The founders and early principals of Central High School sought to establish a system of education there that was both practical and moral in its effects. Attempting to assess the extent of the school's effect on the morals of its students is perhaps not feasible, but measuring its practical impact would be possible given some information on student careers. Fortunately, in his effort to prove that Central was not giving students "a distaste for business," Hart asked students upon leaving the school the nature of their intended occupation and recorded the response in his roll book. Such answers are shown for 79 of the 85 students who entered in the fall of 1850 and who are thus part of my student sample.

The students' responses are shown in Table 4.3. The most striking observation that can be made about this list is that not a single student said he was going to college; instead they all said they were headed for some form of work. Of course since students were asked only about their immediate plans, this does not preclude the possibility that some of them would attend college later on. And in fact the school's semi-centennial catalogue shows that the class produced a minimum of four doctors, four lawyers and two ministers. The four M.D.s at least must have gone to college and possibly others did as well. The point however is not that Central students never went to college but that, true to its founding ideology, the high school was not channeling them into college. Even students who graduated from the nominally college-preparatory classical course were opting for practical over intellectual pursuits, at least in the short term. And when the classical course was dropped, Central graduates were no longer able (even if they were willing) to enroll in college unless they first sought training in Latin and Greek at another school (as, for example, Robert Ellis Thompson did). In practice as well as in theory, Central High School provided a terminal education.

As Table 4.3 shows, over half of the students were planning to become store employees or clerks, which seems to indicate that these were the key entry-level white-collar positions in the mid nineteenth century. More surprising is the fact that a third of the students headed into manual work of some sort, including 22 skilled workers and five farmers. Once again this appears to be situation in which the school's rhetoric was translated into practice. One need only recall Bache's aim "to furnish an education preparatory to the pursuits of commerce, manufactures, and the useful arts." Central carried out this promise by not imbuing its students so thoroughly with "intellectual culture" that they would develop a distaste for the "useful arts."(26)

If one compares father's occupation to son's intended occupation, it appears that the latter was only in part the result of intergenerational occupation transmission. Table 4.4 shows that half of all shopkeepers' sons and half of all skilled workers' sons followed in their fathers' footsteps. Yet two-thirds of the students who went to work in a shop or in a trade had fathers in other occupations; and a quarter of the shopkeepers' sons found their way into a trade while a like proportion of the skilled workers' sons went to work in a shop. Even half of the professionals' sons turned to skilled manual work.

If father's occupation explains part of the career choices of sons, academic merit (as measured by graduation) explains another part. The table below shows the rate of graduation for each category of intended job:

store	0.0%	(29)
clerk	66.7	(15)
other white collar	50.0	(8)
manual	22.2	(27)

None of the 29 store workers graduated. In part this was because a number of boys were going to work for their fathers, but beyond that this finding may mean that jobs in shops were the easiest jobs for boys with no training to find. (Note that even the skilled workers graduated at a 22.2% rate.) In contrast the best students had a strong preference for becoming clerks and other white collar workers, with most of the latter being engineers. Perhaps these jobs were more attractive and were filled, unlike positions in a shop, subject to educational credentials more than inheritance. Thus it appears that school was having an effect on its students: it was producing workers rather than college students and its best performers were laying claim to select positions on the outside.

Maguire Administration

The brief administration of Nicholas Maguire produced a minor and temporary setback in the school's shift toward continually more practical curriculum at the same time that it brought a major and permanent change in the school's pedagogy of character formation. While he reaffirmed his support for the school's traditional goal of a "practically useful and thorough" education, Maguire shifted the emphasis of the curriculum -- if only slightly -- away from Hart's version of practicality.(27) Comparison of Maguire's 1863 course of study (Figure 4.3) with Hart's 1850 version (Figure 4.2) shows that the former chose to incorporate the Latin requirement from the old classical course (but not the Greek) into what was now the only course, at the partial expense of modern languages. The other major difference is that navigation and phonography were dropped while bookkeeping was expanded. The reason Maguire gave for these last moves was that bookkeeping is useful in almost any occupation while phonography, for example, is a skill specific to only a few.(28) Table 4.1 reveals that Maguire actually increased the amount of time devoted to languages (relative to Hart) from 21% to 26% and cut the proportion of vocational courses from 12% to 5%. However none of the other categories changed significantly, which demonstrates the basic stability of the practical curriculum even after two changes of administration.

At the same time that Maguire tinkered with Hart's curriculum, he abolished the latter's system of moral education: never again would misconduct notes be deducted from the academic grades of Central students. The reason for this move was that:

> This practice was evidently unjust and injurious. It destroyed all incentive to study; it deprived the student of those honors which he had fairly won by diligence and industry...(29)

Whereas Hart saw discipline as moral education and integrated it with his practical curriculum by means of grades, Maguire saw discipline merely as a way of achieving "subordination and docility" -- qualities that are not necessarily related to academic performance. ("The brightest scholars are not always the most decorous...")(30) As a result he sought to downplay the importance of discipline and stressed instead the centrality of achievement. "That school is the best disciplined, which is the least governed," he argued, especially one with "pupils, selected as those of the High School are, by personal individual merit..."(31) The abandonment of Hart's grading system thus represented a permanent shift in the nature of education at Central High School. Under Bache and Hart the school had been characterized by a mix of practical curriculum, moral instruction and meritocracy. But by the time of the Civil War moral instruction was consigned to a subordinate role at the school while a greater emphasis was placed on students' academic performance. Within Central High School and without, commerce and merit had gained ascendance over virtue.

Riché Administration

Like all three of his predecessors, George Riché was a strong supporter of practical education. "The aim," he told the board in his first full report, "has been invariably, to promote the thoroughness and the practical tendency of the education provided."(32) In his view practical subjects were primary among the three natural divisions of the curriculum:

> First. The branches of Penmanship, Phonography, Commercial Calculations and Forms, Political Economy, Physical Geography and the German language, unite to constitute a thorough practical business course...
>
> Second. The Mathematical and Natural Science departments co-operate throughout the four years, to prepare the way for the higher walks of manufacturing and mechanical labor...
>
> Third. The departments of English, Latin, German, History and Moral and Mental Science, unite in preparing the students for professional literary study.
>
> It is time the practical character of the work accomplished by the High School, should be realized...(33)

His emphasis on the practical meant that he tended to expand subjects in the first two categories at the expense of those in the third. (See Figure 4.4.) French was dropped entirely in favor of German (seen as more scientific), and Latin was cut back while vocational subjects were expanded -- including the addition of a course in "commercial calculations and business forms." The only expansion of liberal studies came with the creation of a department of English literature. Table 4.1 shows that Riché reduced the time devoted to languages to the lowest level in the school's history -- 18%, compared with 26% for Maguire and 21% for Hart and Bache. While course-years in English rose from 10% to 13%, those in vocational areas doubled to 10%. Other course categories were unchanged.

Like his predecessors, Riché asserted that a practical curriculum required a practical pedagogy. A book-bound pedagogy was no more adequate for the task of preparing boys for the business of life than was a classical curriculum. In his method of instruction:

> Teaching continues to be made as independent as possible of text-books, and the diagrams and apparatus at the command of the Professors are in constant use. In this way the studies are made interesting as well as more instructive, while the student is invited and encouraged to have recourse to the Professors for explanation and assistance whenever they are necessary.(34)

Things over books, explanation over recitation, interest over memory and doing over reading. Like the previous principals (particularly Bache), he felt that boys could understand more and develop more interest when they were encouraged to work things out for themselves with a variety of instruments, models, charts, samples and organs -- known generically as philosophical apparatus. In nearly every one of his annual reports he devoted more than half of his space to a listing of the apparatus acquired during the previous year.

This concentration on physical objects and their manipulation appears to be related to the ideas of the manual training promoters -- related but, at least at the beginning, not the same thing. In 1874 Riché and his faculty rejected the suggestion of the high school committee that they consider establishing a manual training program. But by 1884, at a time when the school board was in the process of forming its first manual training school, Riché told the board that under him the school had been silently expanding in the direction of manual training for years and that this trend should continue.(35)

Many of the purposes of Central's curriculum and pedagogy late in its practical phase can be illustrated through the career of Elihu Thomson. Fascinated by the laboratory sciences as a student at Central, especially physics and chemistry, he helped found a scientific club.

On graduating in 1870 he began teaching chemistry at the school as a lab instructor and later as professor. Using school equipment he began a series of experimental investigations into the basic properties of electricity, publishing papers and gaining a national reputation as well as the first of his 700 patents. After 10 years he resigned and eventually formed an electric company in association with Central professor Edwin Houston for the purpose of developing many of these patents. In 1892 his Thompson-Houston Electric Company merged with Edison General Electric and became the General Electric Company, of which Thomson's former student, Wilbur Rice, was named president.(36)

Thomson was the ideal product of Central's practical education during the Riche administration. In fact he had a great deal in common with Bache: throughout their lives both men sought to apply science to the resolution of the most pressing material problems of their times. But the difference is just as striking. Whereas Bache was an applied scientist and public servant in the mold of Benjamin Franklin, Thomson was an applied scientist and entrepreneur in the mold of Thomas Edison. Central's first leader -- reflecting his early concerns with common schooling, practical education and character building -- wanted the high school to produce citizens who would engage in business, but by the time of Riché the emphasis was more on business than on citizenship. In 40 years of practical education at Central High School the center of gravity had shifted from the public to the private domain.

2. COLLEGE PREPARATORY EDUCATION, 1889 TO PRESENT

Johnson Administration

In the 1880s, toward the end of Riché's term in office, criticism of Central High School's continued commitment to a practical curriculum surfaced in the press, in the school board and within the school itself. One alumnus of the period recalled the situation this way:

> We must remember that at the close of the Riché administration the standing of the school was relatively lower than it had been. Old ideas were being followed, old systems of education prevailed, -- in fact, this school had not kept pace with the progress made by other institutions of similar rank.(37)

Superintendent MacAlister concurred with this assessment, charging in particular that both high schools had failed to adapt to changes in the lower schools where he had just complete upgrading and modernizing the course of study.(38) Joining in on the criticism was the high school committee, one of whose members asserted during a meeting early in 1889:

> For the past twenty years the High School, instead of going forward, has deteriorated and lost prestige. Why gentlemen, thirty years ago it had accomplished teachers in Greek, Latin, French and other languages. Now look at it! It is in the hands of men who are only fit to teach grammar courses.(39)

A majority of the faculty decided that the answer to this problem was not to improve the quality of the professors but to elevate the curriculum. Their plan was to transform Central into a predominantly college preparatory school. A committee report embodying this plan was adopted by the faculty in 1887 after a long and bitter debate. The vote was eight to six with the innovators coming from the ranks of the college-educated professors who were not alumni of the school while the supporters of the old curriculum were for the most part educated only at Central. The report that was approved has not survived, but the minority report has. In its opening statement the minority called for a reaffirmation of the high school's 50-year commitment to the ideology of practical education:

> The records of the Central High School show that four-fifths of its students do not enter professional life. It has been the aim of the school to provide a practical education suited to the age of the students and the needs of the day. Science has hitherto wisely occupied a prominent place in the curriculum. The growth of the school in this direction in contradistinction to the classical bias, which the report of the majority of the Faculty would give it, has been but in accord with the practical tendencies of modern education. Heretofore, the instruction in modern and classical languages was of course inadequate as a preparation for a university course. This arose from the fact that the number of those who desired to pursue such a course was so small that it seemed an injustice to sacrifice the interests of eighty per cent. of the students to enable the remainder to prepare for a university. While it is desirable that classical training should be given to those who wish it, it must be conceded in view of the interests of the larger number, that it would be a grave mistake to make such training the dominant feature in the Central High School, as is

> distinctly proposed by the report of the majority.(40)

As an alternative the minority professors proposed a dual curriculum -- a three-year university-oriented course (with the last year devoted solely to preparatory studies) and a four-year general course. In this proposal (as shown in Table 4.5) the sharpest differences between the two courses were in languages and science: the proportion of time spent on languages would be 30% for the college-preparatory students, compared to 17% for the general student; while the proportion of time spent on sciences by the former would be only 27%, compared to 45% for the latter. If these time allocations are placed beside those in effect during the Riché administration, it is apparent that the minority general course and Riché's principal course were similar except for two categories. Riche's vocational courses were eliminated from the minority proposal, and the proportion of class time devoted to them (10%) was added to science in the general course (and to languages in the preparatory course).

Apparently the supporters of practical education during its waning hours were willing to sacrifice vocationalism in order to save practicality. And it is ironic that by so doing they succeeded in reinventing Bache's original principal course. Category by category the 1887 minority proposal matches the 1840 principal course more closely than any other curriculum. Like the high school's founder, the faculty rear guard in the 1880s saw the essence of practical education not in vocationalism but in science, not in preparation of a few for college but preparation of the many for life.

But the minority of the faculty lost. The high school committee in the following year chose Henry C. Johnson as president with the understanding that he would re-orient the school toward the university as the majority professors had proposed. Given this understanding, it was no accident that the new president was a university-trained university professor, and it may be particularly significant that his field of specialization was Latin.

If the high school's degree of control over the admissions process was a measure of its institutional power (as suggested in chapter one), then the place of classical languages within its curriculum was a measure of the school's educational goals. The degree to which classics were taught at Central indicates whether the school was intended to prepare students for more education (where such studies were required) or for business (where they were unnecessary). In the early history of Central High School, this indicator started in the middle range and steadily declined. Bache included a classics course but only with reluctance. Hart reduced the time devoted to classics and later eliminated it as a separate curriculum. He and Maguire dropped Greek entirely while retaining a diminished Latin program within the uniform course. Riche further cut back Latin instruction to make room for more practical subjects. Overall, during Central's first four administrations, the maximum proportion of class time spent on classical languages fell from 21% to 16% to 13% to 10%. Then in 1888 the high school committee chose a classicist for president. In light of his background and the prevailing sentiment about the school's curriculum, Johnson seems to have been granted a firm mandate to reverse the 50-year trend toward ever more practical education.

The course of study introduced by Johnson is shown in Figure 4.5. It presented the student with the choice of five different curricula:

> Classical: including Greek, Latin and French or German.
>
> Regular: including Latin, French and German.
>
> Chemistry: like the regular course but stressing chemistry.
>
> Physics: like the regular course but devoting more time to higher mathematics, mechanics and physics.
>
> Scientific: different from the regular course; stressing general science, mathematics and English and offering Latin, German and French in the upper classes.(41)

The first four courses required students to take identical subjects for their initial three terms in the school. The scientific course was different in this regard because it was "designed principally for those who enter the school with the expectation of remaining only one or two years..."(42)

In comparison to that of his predecessor, the course of study devised by Johnson was distinguished by two qualities that mark it as a watershed in the history of Central High School: it replaced uniformity with differentiation and it dropped practical preparation for college preparation. For 32 of the high school's first 50 years, students were given no choice about courses. Even in the early days when three options were presented, the differences between these options were relatively slight and the choice was offered for tactical reasons rather than as an expression of educational philosophy.

In Johnson's curriculum, both the classical and regular courses of study were clearly college preparatory, while a less powerful case could be made about the preparatory character of the chemical and physical courses. The former pair of courses were distinguishable from the others by the number of course-years devoted to language study -- eight and seven respectively, compared with four and a half or five for the rest. Both required four years of Latin, to which the classical course added three years of Greek and the regular course added three years of modern languages. The remaining courses only demanded one and a half or two years of Latin. (The Report of the Committee of Ten on Secondary School Studies in 1894 proposed a standard of seven years of language study for three of its four high school courses directed toward college.)(43) The relatively small amount of language training in the chemistry and physics programs placed them in an anomalous position; for although they had a lower language requirement than had been included even in the English program proposed by the Committee of Ten, they were constituted as a branch of the preparatory regular program and they compensated for their language deficiencies with advanced work in science.

The finding that only two of the courses in the new curriculum were unreservedly college-oriented appears to belie the earlier claim that this curriculum transformed Central into a college preparatory school: perhaps the change merely led to the introduction of a college option within a practical program. But there are several reasons for thinking that the latter interpretation is not correct. One is that both the supporters and opponents of the change saw it as a struggle for the basic character of the school and not as a marginal shift. (The minority report made this point clear.) A second reason is that in terms of students enrolled, the two main college preparatory courses were indeed the dominant force within the school. Table 4.6 shows the breakdown of students at the school in 1893 by course. Only 17% of the freshmen decided to cut themselves off altogether from the college options by choosing the scientific course. By the junior year, after students had sorted themselves into the remaining options (and after most had left), no fewer than three-quarters of them were pursuing studies in the two firmly preparatory courses, with half of them in classics alone.

Yet there is a sense in which the new curriculum appears to be less dramatically different from the old than the rhetoric of the period suggests. Table 4.1 permits a comparison between the proportion of time allotted to the various subjects by Johnson with the pattern of allotments under Riché. Of course some differences are dramatic: Johnson dropped vocational subjects entirely, increased the time for science from 33% to about 40% for three courses and to 49% for chemistry and physics, raised English by half for scientific students and more than doubled Riché's classics requirement for the classics students.

However the proportion of time spent on English, history and other were essentially unchanged from the old curriculum and the language changes were not all in the direction of elevating Riché's standards. While Johnson's classical and regular programs represented increases in the amount of time spent on languages from Riché's 18% to 24% and 21% respectively, the corresponding proportions in the scientific course dropped below Riché's level to 15% while in chemistry and physics it fell to 13%. And although Johnson required that every student be exposed to three languages (vs. two for Riché), his curriculum actually left students with less time in each language than they had had under Riché -- except for Latin and Greek in the preparatory courses. Even if one turns from time allocations to the content of specific subject areas, the new curriculum appears not necessarily to have been more advanced than the old. Mathematics under Riché started with algebra and then moved in succession through geometry, trigonometry, analytical geometry and calculus (Figure 4.4). Under Johnson studies began at a lower level, with arithmetic, and then progressed to algebra, geometry and ended with trigonometry (Figure 4.5).

The absence of an across-the-board elevation of Central's curriculum in 1889 should not be interpreted as undercutting the significance of this date in Central's history. This point still must be seen as marking a major transition in the school. However the introduction of Johnson's new curriculum in that year must be understood as having a symbolic significance that exceeded its meaning in terms of time allocations and course coverage. The new curriculum was seen as standing for a new kind of school and the old curriculum as representing the way the school had been, even though the actual differences separating the two were less dramatic.

Thompson Administration

While President Johnson initiated the major change in Central's curriculum, it was his successor, Robert Ellis Thompson, who managed to institutionalize the change. Figure 4.6 shows his course of study in 1900, which included four course offerings: classical, Latin scientific, modern-languages scientific, and commercial. His allocation of time to the various subject areas in each course can be compared to Johnson's on Table 4.7. (This table is based on the distribution of course-hours rather than course-years to permit a closer comparison.) The two classical programs are similar except that Thompson increased time for classical languages from 25% to 35% of total instruction. But Johnson's regular, chemical and physical courses were combined and upgraded into a single college-preparatory scientific course, offering the option of a Latin or modern languages emphasis. This course appears quite similar to the former regular course except for a small increase in science at the expense of history. Finally the old scientific course was transformed into a commercial program which, at the beginning, was intended to be terminal like its predecessor. This program, which was forced upon Thompson by the school board, included more modern languages and history than any other course and considerably less science, while it reintroduced vocational subjects accounting for 16% of class time. The commercial curriculum was completely segregated from the rest of the school, so that even its non-vocational courses were business-oriented -- with titles like "science (raw materials of commerce)" and "modern industrial and commercial history."

Thompson had two enduring effects on Central's curriculum. One was to reinforce the bifurcation of the curriculum which had begun under Johnson with the separation of the scientific from the college preparatory courses. Thompson established two distinct tracks, academic and commercial which were more sharply differentiated from each other than were his predecessor's -- first, because he resolved the ambiguous intermediate status of chemistry and physics in favor of college preparation, and second, because his terminal course was (unlike Johnson's) decidedly business-oriented. All of the academic students took the same freshman subjects and then separated into three related courses which prepared them for admission into various arts and sciences programs at the university. The three academic courses resembled three of the four college preparatory courses of study proposed by the Committee of Ten in its 1894 report on high school curriculum. The names -- classical, Latin scientific and modern language scientific -- were identical, and the content was similar. Table 4.8 shows that the primary difference in content was Central's emphasis on science at the expense of languages.

In contrast commercial students took specialized business-oriented subjects in relative isolation from the academic students. The official description of the course asserted that "The Department of Commerce is conceived on a broader basis than that of a mere business school,"(44) and in a sense this was accurate. Compared with proprietary commercial schools at the time and with later versions of the high school commercial course, Thompson's program in commerce contained a sizeable share of standard academic offerings. However while shunning simple vocationalism, the new course did embody aims which were quite different from those of the academic track:

> The purpose is to regard business as a special occupation or profession and to indicate some of the ways in which knowledge affects it. In no sense is it proposed to turn out from this department a thoroughly trained businessman, but rather a man so trained that he may quickly adjust himself in, and be useful to, the business into which he may enter.(45)

The academic and commercial tracks represented a separation and intensification of two tendencies which had existed within the practical principal curriculum during the school's first 50 years. In this period it was generally agreed that Central's goals should be to prepare students in a general way for entrance into business life rather than college, but the appropriate means of achieving this goal were less clearly defined. While a concensus favored a strong emphasis on science, there was a continuing tension over whether languages (especially classical languages) on the one hand or vocational subjects on the other made a significant contribution toward a practical education. As a result, science (after Bache) held a steady one-third share of total instruction time in the principal course; but the time spent on languages fluctuated between 18% and 26% generally and between zero and 13% for classics, while the proportion of time devoted to vocational studies varied between zero and 12%. When in 1889 these two tendencies were released from the bonds of practical education which had for so long tied them together, the result was the creation of two distinct tracks, both of them unencumbered by the compromising characteristics of the old system. The academic course was oriented directly toward preparation for college, and this tendency encouraged within it the enhancement of classical languages and the abandonment of vocationalism; while the commercial course was aimed directly toward preparation for business, and this tendency led to a more specifically business-oriented curriculum and an enhancement of vocationalism.

If the students in the two tracks are compared, they appear to differ in both social characteristics and performance traits. Table 4.9 displays the class distributions of the students in each course from 1890 to 1920. It is apparent that at least in the beginning of Central's college preparatory phase, the scientific and commercial course were drawing their students from a somewhat different pool of families than was the academic course. In 1890 and 1900 over half of the academic students came from the proprietary middle class, which supplied only about a third of the other courses, while only a fifth of the academic students were skilled workers' sons compared with a third of the scientific and commercial students. These differences were reduced somewhat in 1910 but then re-emerged in 1920 with the arrival of the industrial arts students.

The class distributions in each curriculum are transformed into an index of class representativeness in Table 4.10. This index is formed by dividing the proportion of students in a given class for a particular year and curriculum (Table 4.9) by the proportion of students in that class for all curricula in the same year (Table 3.3). Thus an index of more than 1.0 shows an over-representation of a class in a given curriculum and an index of less than 1.0 shows an under-representation.

In these terms the proprietary middle class was consistently over-represented in the academic course over this period, with an index ranging from 1.05 to 1.25. The skilled workers were over-represented in the scientific and commercial courses between 1890 and 1910 with indices between 1.22 and 1.42, but in 1920 this index dropped to 1.06 while the index for the industrial course registered at 1.44. At the same time, while the employed middle class had a consistently proportional representation in the academic course (with an index close to 1.0), it showed sharply declining interest in the scientific/commercial course (with an index dropping from 1.31 in 1890 to .63 in 1920) and recorded a marked interest in the new mechanical and industrial courses offered in 1920.

Thus when the uniform course was abandoned in favor of electives the students became partly differentiated by social class. The proprietary middle class, which wanted and could afford college for its sons, opted heavily for the academic course while the skilled working class prodded its sons into the more practical and more realistic scientific, commercial and industrial courses. The more complex pattern of curriculum choice shown by the employed middle class is difficult to interpret on the basis of these data alone.

The two courses were distinguished by the quality of student performances as well as by student class background. As Table 4.11 shows, academic students were much more likely to graduate than scientific and commercial students -- one and a half times as likely in 1900 and 1910 and three and a half times as likely in 1890 and 1920. Predictably the college preparatory program produced more graduates than the terminal program. And given the analysis in chapter three of the effect of grades on graduation, it is equally predictable that the differences in graduation rate between courses would be matched by differences in student achievement. For three of the four years this hypothesis is confirmed: in 1890, 1910 and 1920 the academic course had a notably higher proportion of students with high grades than did the other course. The 1900 cohort, in which the proportions were nearly identical, presents an anomaly; perhaps in the first few years of the commercial program grading was less rigorous than in the academic course, although this did not appear to be the case near the beginning of the scientific course in 1890.

The academic and commercial tracks were anything but equal. The academic course was the dominant force within the school, and Thompson's second enduring effect was his success in indelibly stamping Central as a thoroughly academic high school. He once expressed the feeling that he and Johnson had saved the school from its long descent into uniformity by restoring the diversified curriculum offered by Bache.(46) In so writing he chose to ignore the fact that Bache saw the classical course as a temporary expedient designed to draw support to the school while the principal course had his full philosophical support as the preferred alternative to a traditional classical education. But it was precisely the latter form of education that Thomson sought to promote. As his friend and biographer wrote:

> Dr. Thompson did not believe that every boy who goes to college should take the classical course, but he did think that the A.B. degree should be the hallmark of a cultural course. He knew well the tendency that had always existed in Philadelphia to insist upon what we call the "practical studies," those that mean preparation to make money. With this insistence has always been the tendency to shorten the course, presumably for the same object. He felt that college education should seek a wider diffusion of sound literary taste and the cultivation of the literary faculty in those who possess it. He would have agreed...that the arts course was not intended to teach anything practical.(47)

Armed with these views on education, Thompson proceeded to consign the less able to a course far more "practical" than anything his predecessors had conceived and to fortify his beloved literary studies by creating a program that was in turn far more academic than any that had preceded it. The clearest sign of the latter tendency was his strengthening of the classical language requirements in all three academic courses, especially classics. But there is also a sign that he was working at cross purposes with an entrenched tradition of practical education: compared with the Committee of Ten proposals, Thompson's academic courses were still weak in modern languages and strong in science, a legacy of the former curriculum.

In spite of such forced compromises with tradition, the academic courses took the leading role at Central High School. Even in the absence of superior performance the academic students would have dominated the school by dint of sheer numbers. For example in the class that entered in 1900 only 34.1% of the students enrolled in the commercial department, and the high attrition among these students meant that they accounted for only 24.4% of the graduates of that class. (See Table 4.12.) Thus the higher grade levels at the school were even more heavily academic than the lower levels. And within the academic track the Latin-based courses -- Latin-scientific and classical -- were favored over the modern languages option by an overwhelming margin. Out of all of the academic students in the 1900 cohort who stayed in school long enough to pick a specialty, 51.9% chose Latin scientific, 31.5% classical and only 16.7% selected modern languages.(48) Significantly, the more popular of the academic courses also drew the high achieving students: about a fifth of all Latin-scientific and classical students had superior grades while none of the modern language students did.

Another sign of academic ascendance under Thompson was his transformation of the school's promotion policy. He abandoned the old procedure by which a student was promoted on the basis of achieving a certain general average in favor of a new standard which required that a student pass every subject in one grade-level before he could be promoted to the next. If a student failed fewer than two-fifths of his courses he could be promoted "with condition," but this condition had to be cleared within a year by scoring well in the next class of the subject or by taking an exam. If he failed more than two-fifths he had to repeat the entire year, including the courses he passed the first time.(49)

One can readily imagine the difficulties this promotion system imposed on the student who was merely average and thus had trouble with his grades from time to time. Such a student would often find himself promoted to a higher grade where he would be expected to keep up with a more difficult level of work while at the same time exerting himself to clear his previous deficiency. With this added burden placed on them, large numbers of students would eventually be forced to repeat terms. As Table 4.13 shows, no less than 43.4% of the class that entered Central in 1910 repeated at least on term. Even a third of those high-achieving students who succeeded in graduating were flunked one or more times while seven graduates failed three or more times. If the best students had this much difficulty in working their way through Central High School then Thompson had indeed succeeded in creating the kind of harshly rigorous academic environment that he sought. For students with average ability or less, the message was quite clear: this was not their kind of school. So they left. In 1900, 44.8% of the entering class dropped out after the first year.

Consequences of the Differentiated Curriculum

Some of the effects of Thompson's curriculum can be explored by examining the college and career histories of the school's alumni during his administration. Fortunately the class that entered in 1900, which is included in my student sample, collected and published individual biographies of its graduates at ten-year intervals after graduation. Information from the first and third of these books (gathered in 1914 and 1934) has been coded and added to my student dataset.(50) One finding from these data is that the new college-preparatory high school really did send a large number of its students to college. No fewer than 60.7% of the graduates attended college at some time, 53.3% earned a degree and 23.0% earned a graduate degree. While no direct comparison with the 1850 alumni sample is possible, it is nonetheless worth noting that none of the students in that class planned to go college immediately after leaving Central. Thus both the practical education curriculum and the college oriented curriculum seemed to have the desired effect on the college attendance patterns of their students. As expected, academic students were more likely to go to college than commercial students: 66.3% of the academic graduates went to college compared with 44.0% of the commercial graduates. The gap grows even wider if one takes into account the different rates of graduation of the two groups: thus 18.7% of those who first entered the academic program eventually attended college as opposed to only 6.0% of the commercial entrants. Consider the effects of the following variables on rates of college attendance:

> Class: middle class employee sons were the most likely to attend college (69.2%) followed by those of the proprietary middle class (58.3%) and skilled working class (48.0%).
>
> Grades: compared with class, grades had a significant but somewhat lesser effect with 67.4% of the top students going to college compared with 57.0% of the others. Of course, these graduates as a group tended to have high grades to begin with.
>
> Birthorder: an only child (75.0%) or oldest child (66.7%) was more likely to go to college than a middle (51.6%) or youngest child (46.1%).
>
> Ethnicity: sons of German immigrants (75.0%) were more likely to attend college than sons of native-born Americans (63.3%) or sons of Russian immigrants (53.9%).

In addition to college attendance, the alumni data can help illuminate the character of the work pursued by

Central's graduates during the Thompson administration. No less than 38.0% of the graduates entered the professions, 26.4% became white collar supervisors or executives, 29.8% became white collar employees while 5.8% were in miscellaneous occupations (mostly proprietary). Once again direct comparisons are not possible with the 1850 alumni data, since the occupations recorded there were the students' first positions out of school. However one comparison is indicative of the difference in both aims and effects between the curricula of the practical and academic periods in Central's history: almost none of the 1900 graduates went to work with his hands while 30.0% of the 1850 graduates at least started out in manual work. As one might have predicted, the largest share of the academic graduates entered the professions (43.6%) while the largest share of commercial graduates became white collar employees (44.0%). Other variables affected the career choices of 1900 graduates including the following:

> College attendance: predictably 73.9% of the professionals went to college compared with 59.4% of the supervisors, 52.8% of the white collar employees and 14.3 of the others.
>
> Class: the class origins of students were not significantly related to their eventual career choice. (See Table 4.14.)
>
> Grades: student achievement varied directly with job status -- 45.7% of the professionals were top students compared with 37.5% of the supervisors, 27.8% of the white collar employees and none of the others.

Birthorder: professional status was largely unrelated to birthorder.

Ethnicity: Russians (61.5%) and Germans (50.0%) produced a higher proportion of professionals than did native Americans (35.0%).

To summarize the effects of Thompson's curriculum on Central graduates: as promised, Central High School prepared its graduates for college quite effectively, for fully 60% of them pursued higher education. The graduates of the academic course, who tended to be better students to begin with and who in addition were specifically trained for college admission, were naturally much more likely to attend college than commercial graduates. But factors outside the school also enhanced the chances for college attendance including membership in the white collar employee class, being an only or oldest child and having German parents. Meanwhile the likelihood that Central graduates would become professionals was furthered by the same within-school combination of high grades and academic training in conjunction with college attendance. Extramural factors had less impact on jobs than on college attendance, for professional status was not significantly related to either social class or birthorder.

Haney Administration

To all appearances, the school which John L. Haney took over in 1920 was a thoroughly comprehensive high school. It seemed to bear little resemblance to the intensely academic high school established during the Johnson and early Thompson years. Over two decades no fewer than three extra-academic curricula were forced on Central: a commercial course, created de novo in 1898; a mechanic arts course, added through the absorption of Central Manual Training School in 1912; and an industrial arts course, added as a result of the takeover of Philadelphia Trades School in 1919.

Even when one compares only the academic and commercial courses that were carried over from the 1900 curriculum, their content seems significantly diluted by 1920. Table 4.1 shows that the time devoted to languages in the academic course dropped from a minimum of 21% in 1900 to 16% in 1920 (a lower level than even Riché required), while in the commercial course the proportion declined from 20% to only 8%. Science declined for both courses, and the introduction of a physical training requirement increased the time spent on "other" for both courses. At the same time the commercial course showed special growth in English and those vocational and other subjects that do not fit easily into academic categories, accomplished at the expense of history and science as well as languages. Turning to the new courses, mechanic arts had a pattern of time allocations quite similar to commerce while industrial arts had a pattern that was distinctly vocational -- with 42% of total instruction devoted to vocational subjects, none to languages and with the bulk of the academic training concentrated in English.

Thus by 1920 the academic course was subjected to a weakening of its once strong literary and scientific content, and it was surrounded by three other courses that were at least in part obviously vocational in character. In addition, while the academic students had dominated the school during most of Thompson's administration in 1920 they found themselves outnumbered by their nonacademic classmates. Only 39.1% of the class entering in 1920 were in the academic course, compared to 19.9% in commercial, 10.6% in mechanic arts and 30.3% in industrial arts.(51)

These changes were not ones that a man with Thompson's devotion to academic tradition would have accepted voluntarily. They were forced on him by a series of superintendents whose actions were based on the most advanced educational thought. During the second decade of the twentieth century the social efficiency movement swept school administrators across the country. Leaders of this movement advocated, among other things, the establishment of comprehensive high schools (offering a variety of programs to a cross-section of the population), a reduction in time spent on foreign languages and mathematics and an increase in the time spent on vocational subjects. Central High School during the first part of Thompson's administration was the antithesis of the social efficiency ideal: it was strictly and traditionally academic and it drew from an elite segment of the population. The natural object of attack by the supporters of the new educational ideology, Central was subjected to a series of alterations. However to a remarkable degree the school's presidents and faculty managed to contain and even occasionally coopt many of these intrusions into its academic goals.

Consider the addition of courses. Central Manual Training School and Philadelphia Trades School were merged into the high school, contributing two new courses of study to its menu, but this was purely an administrative move. Both of the merged schools remained in their original buildings along with their original faculty, while the main building continued to house the academic and commercial courses just as it had before. By isolating the newcomers, the school succeeded in preserving its traditional form of education; and within the walls of the main building, the academic course was still dominant, with its students outnumbering the commercial students by the same two-to-one ratio that had existed in 1900. (See Table 4.12.)

As well as containing curricular incursions, the high school succeeded in transforming some unwanted additions into a form more compatible with its academic orientation. Although the commercial and mechanic arts courses were by nature incompatible with the liberal arts focus of the academic course, they were nonetheless made into programs which prepared at least some students for admission to college business or engineering programs. This meant that only the industrial arts course lacked any college preparatory aim, and this lack only served to isolate the program even further from the academic mainstream of the school.(52)

Thus Central High School in 1920 retained much of Thompson's academic influence. Another sign of this was that the differences in content between the academic and commercial courses were if anything stronger in 1920 than they had been in 1900. Table 4.1 shows that while there was a general decline in the content of both courses in the 20 year period (as measured by languages and science), the relative position of the academic course was actually enhanced. In 1900 the academic course required between 5% and 45% more language training than the commercial course, but in 1920 it demanded 100% more. By the start of Haney's administration, language instruction was becoming differentially associated with the academic course of study while Latin had become its exclusive property.

3. CONCLUSION

The social history of curriculum at Philadelphia's Central High School for boys during its first 100 years is divided into two distinct phases. The transition from the first of these phases to the second was marked by three major changes -- a change of purpose, a change of structure and a change of content.

Central's founders sought to embed in it a dedication to the purpose of providing a thoroughly practical education to the city's most able young men. This practicality of purpose represented the high value which bourgeois ideology placed on active participation in commercial life. A high school was seen as a place which should prepare boys to become men of affairs not men of letters, and thus Central's curriculum de-emphasized the classical training needed for college admission. However in 1889 a new administration abandoned the school's 50-year tradition of practical education and installed a curriculum which was self-consciously college preparatory. Instead of equipping boys for business, Central now sought to equip them for higher learning.

The practicality of purpose which characterized the early high school was matched by a uniformity of structure. Although there were three courses of study at the beginning, the others were always subsidiary to the principal course; and from 1856 to 1889 the principal course was indeed the only one. This uniformity of curriculum was an expression of middle class concern for the preservation of social unity from the effects of class divisions, an extension of the common school idea. However in 1889 the curriculum's uniformity was abandoned in favor of sharp differentiation. Students within the major courses of study were segregated from each other within the school and were directed toward alternative outcomes: college for the academic students, clerical work and business for the commercial students, engineering for mechanic arts students and the factory for industrial arts students.

The transition from the old curriculum to the new also had a significant impact on instructional content. The new academic course stressed languages -- particularly classical languages -- and sciences more than the old principal course while it dropped all of the former clerical-vocational subjects. At the same time the non-academic tracks tended to emphasize these very vocational subjects at the expense of the languages, particularly classical languages.

It is my aim in the discussion that follows to analyze the meaning of this dramatic transformation of the curriculum at Central High School, in both historical and sociological terms. First, I will seek to establish that Central's practical and academic curricula were particular examples of what Basil Bernstein calls integrated and collection codes. Second, I will attempt to explain why Central adopted a practical and uniform curriculum (integrated code) from the beginning and kept it for 50 years. And last, I will examine the reasons for Central's sudden shift to a differentiated college-preparatory curriculum (collection code).

Bernstein's Curriculum Codes and the Central Curriculum

According to Basil Bernstein (as explained in the introduction), school curricula can be characterized by the knowledge codes embodied in them.(53) These codes provide the inner structure of the curricula and as such they constrain the ways in which knowledge is presented and perceived. He has identified two major types of codes, collection and integrated. It is my argument that Central's practical curriculum can be characterized as an integrated code and the academic curriculum as a collection code. Collection codes are defined by traits which he calls strong classification and strong framing while integrated codes have weak classification and (usually) weak framing.

Classification reflects the degree of differentiation within a curriculum and the strength of the boundaries separating academic specialties from each other. For most of the practical period at Central High School there was only one course of study offered to students and within this course the barriers between individual subjects were relatively low, both signs of weak classification. The course was treated as an integrated whole rather than as a collection of particular fields, and the organizational result was that the school was governed by the faculty acting as a committee of the whole. By contrast, Central's curriculum in the academic era could be characterized as having stronger classification. There were two distinct courses of study with clearly defined boundaries between them, and within the academic course there were three partially bounded sub-programs. Not only were the courses treated as independent entities but much of the school's governance devolved onto individual departments as defined by disciplinary boundaries.

While classification refers to the boundaries between sectors of pedagogically-transmitted knowledge, framing refers to the boundaries between school knowledge and commonsense knowledge. In these terms Central's practical curriculum was weakly framed, for it was deliberately directed toward meeting the demands of middle class commercial life. The school's founders sought to turn away from the esoteric learning embodied in the classical curriculum in favor of the kind of learning required by the ordinary man of affairs. The academic curriculum represented a shift toward a stronger frame, for the knowledge transmitted not only became more esoteric per se (more classical) but also became more oriented toward the pursuit of still higher forms of learning (representing a further separation from community knowledge).

That Central's curricula meet Bernstein's criteria for integrated and collection codes is remarkable in two ways. First, as he himself acknowledges, his essay on the subject is an exercise in pure theoretical speculation that is lacking in any concrete supporting evidence. In fact he closes the paper with a plea for empirical studies which would flesh out or modify his theory. This chapter could be viewed as such a study, and the close fit between his theory and pedagogical practice at Central High School provides a testament to the power of his theorizing and the potential for further confirmation in other studies. Second, this support for Bernstein is all the more remarkable since the referent for his speculations was the English educational system of the 1960s rather than the American system in the nineteenth century. His categories appear able to transcend both cultural and temporal barriers, as long as one interprets the defining characteristics of these categories in relative rather than absolute terms. For even though Central's academic curriculum from the 1890s was much more weakly classified and framed than the modern English secondary curriculum, it was still stronger in these characteristics than the practical curriculum that preceded it.

Bernstein not only defines the characteristics of the two curriculum codes; he also deduces from these characteristics the organizational implications of each code, and his predictions are borne out by the organizational history of Central High School during its practical and academic periods. First, Bernstein asserts that a school with an integrated code would be characterized by a mechanical solidarity which requires a high degree of ideological concensus. There must be explicit, uniform and unquestioning devotion within the school to the integrating ideas of the curriculum. During Central's first 50 years, its presidents and professors maintained an extraordinary ideological unity. The school during this period unswervingly dedicated itself to an interconnected pair of ideas: a thoroughly practical curriculum and a thoroughly meritocratic pedagogy. When the concensus over the curriculum began to crack in the 1880s, the stage was set for a shift toward collection code -- which, because of its insular structure, requires less ideological unity in order to maintain itself.

Second, since the maintenance of the school's ideology is so important in conjunction with an integrated code, the school would be required to socialize its new teachers into this ideology with considerable care and also to shore up the beliefs of existing faculty through regular rituals of rededication. Evidence for the former is the clear preference in the early high school for hiring Central graduates as professors, since these men were already socialized into its mysteries. (Their diplomas could be interpreted as certificates of ideological competency.) Evidence for the latter is the longstanding tradition of the weekly faculty meeting, which on the organizational level provided the natural mode of governance for the school in the era of practical education -- collegial rule over an integrated curriculum -- and which on an ideological level constituted a ritual for maintaining the ideals of practicality and meritocracy. In these meetings the professors continually recreated ideological concensus by providing collective oversight for the school's ongoing processes of practical instruction and meritocratic evaluation and by resolving differences among themselves through formal parliamentary procedure. (The student version of this ritual was the morning assembly.)

By contrast a school with a collection code does not need to socialize its teachers because they have already been socialized into the subculture of their individual disciplines as a by-product of their specialized training.

Within the looser ideological structure of such a school, concensus occurs naturally within each department but is not required for the school as a whole. Under Central's new collection code, the organization that emerged was, as Bernstein predicted, significantly more differentiated than that which preceded it -- both horizontally, into a series of discipline-based departments, and vertically, into a series of administrative committees (capped by the office of the president).

A third consequence of an integrated code for a school's organization is that weak classification and weak framing make it less likely that the school's influence on the student will be limited merely to academic affairs. Under a collection code the entire organizational focus of the school is on the transmission of insular academic traditions, and thus the overarching criterion for evaluating students is cognitive. However with an integrated code the school is seen less as the agent for academic disciplines than as an extension of the needs, values and knowledge of the community. Therefore Bernstein notes that in such a school the criteria of evaluation are likely to be broader than under collection, including both cognitive and attitudinal traits of the students.

Central provides a striking confirmation of this point. For the first 20 years of the integrated curriculum the faculty calculated a student's grade on the basis of both academic achievement and personal conduct. Misconduct demerits were actually deducted from average course-work in determining a student's final standing. Theoretically one would expect this process to be abandoned in favor of pure cognitive evaluation at the time when a collection code was instituted at the school in 1889. However this change actually occurred 30 years earlier at the start of the administration of Nicholas Maguire, when it set off a furor which eventually cost Maguire his job. Viewing this change as premature helps explain some of the hostility which Maguire faced from the faculty when he imposed the new cognitive standard. Testimony during the controversy that followed this move makes it clear that influencing a student's morals as well as his mind was key part of what the faculty saw as the school's practical mission and thus constituted an essential element of the school's organizational ideology. Maguire was thus seen as guilty of tampering with one of the constituting and hitherto unquestioned beliefs of the integrated curriculum, and as a result he was treated as a heretic and banished. However the practice of deducting demerits was never restored: perhaps once such a belief is openly and successfully challenged it can never again be accepted as a matter of simple dogma. I wish to suggest that this shift toward a purely cognitive standard should be interpreted as a first step toward strengthening the high school's frame. This move raised the level of the barrier between the school and the community by announcing the school's intention to grade people on their acquisition of school knowledge rather than rewarding them for adapting to community mores.

Examining England in the 1960s, Bernstein found curricula that had been characterized by collection codes moving tentatively in the direction of integrated codes, while at Central High School in the nineteenth century the curriculum moved abruptly in the other direction. He provides an explanation for why the contemporary English changes are so tentative and in the process supplies a hint of why the opposite change might have occurred at Central. The maintenance of a school organization based on an integrated code is, he asserts, by nature problematic. Such a school must have an explicit ideological concensus; must maintain it by socializing its teachers, promoting rituals of reaffirmation and governing collegially; and must extend itself over more than just the mind of the students. By contrast a school under a collection code can be looser ideologically: thus it does not have to socialize its teachers or work at preserving their dedication, it can resort to a more bureaucratic (and thus more stable) form of governance, and it is able to narrow its focus to the cognitive abilities of its students. All of these traits seem to make it organizationally difficult for a school to maintain an integrated code over a long period of time; collection codes appear better suited to survival. Given this conclusion, the transition from practical to academic curriculum at Central High School in 1889 was more or less inevitable; what is surprising is that the demise of the integrated code did not happen sooner.

In the sections that follow I will explore some of these issues more fully, branching out from the present narrow focus on Bernstein's categories to incorporate a variety of historical and sociological modes of explanation. In the first section I will examine the reasons for the establishment and retention of the practical curriculum at the high school; in the second I will turn to the reasons for the changeover in 1889.

Roots of the Practical Uniform Curriculum

The early curriculum at Central High School can best be described as both uniform and practical. The uniformity of the curriculum reflects its weak classification, the lack of rigid boundaries between disciplines. The practicality of the curriculum in turn reflects its weak framing, the lack of a rigid barrier between school knowledge and community knowledge. I wish to examine the reasons for each of these characteristics separately, beginning with practicality.

Central was by no means unique in offering a practical curriculum. In fact the typical public high school and private academy in nineteenth century America offered a terminal course, usually labeled "English," which was similar to Central's course in most respects. These courses in general tended to stress science and modern languages at the expense of classics and often included semi-vocational subjects such as bookkeeping and phonography. What makes Central unusual is not the existence of a practical course but the absence of a college-preparatory classical alternative to it. While Central abandoned its classical elective early in its history, most of the large secondary schools continued to offer curricula in both classics and English throughout the nineteenth century.

To understand why practical education was so broadly popular in American during the previous century, one must compare it with the most widely available alternative, classical education. I wish to argue that practical education during this era was valued as a process for transmitting useful skills while classical education was valued as a process for conferring academic credentials. Originally the knowledge of Latin was itself a useful skill for anyone who wanted to be a doctor, lawyer or clergymen, since all of the source materials and scholarship in these fields were written in that language. However by the 1830s (when Central's curriculum was being formulated), a burgeoning literature in English had made Latin unnecessary as an occupational skill. But the knowledge of Latin continued to be useful as a credential, for its acquisition was still required in order to gain entry into professional training. And in a broader sense it had gained currency as a status symbol, since it represented a desirable degree of middle-class cultivation and provided an entree into college.

Arrayed against the credential value of the classical course was the human capital value of the practical course. Not that the latter contained more than a few subjects which were intended to train people for particular occupational slots. The practical goals enunciated by all of Central's early presidents and echoed by other schoolmen around the country were to give students general skills and capacities which could be put to good use in the broad realm of commercial life. Learning science was useful because as technology it was a key spur to industrial expansion (witness the work of the high school's most noted scientists, Alexander Dallas Bache and Elihu Thomson), because as a technique of empirical analysis it could provide the means to a variety of productive ends, and because as a general vision it gave the student a worldly orientation. Learning modern languages in turn could be useful in trade, and more generally -- like science -- served to focus the student's attention on the contemporary world rather than on antiquity.

These traits of the practical curriculum are also traits of the ideal-typical bourgeois mind. The cognitive orientation of the capitalist is pragmatic, concrete, empiricist and this-worldly. The cognitive outcomes of classical training are in conflict with this array of characteristics at every point, for they tend toward philosophical, abstract, deductive and other-worldly modes of thought. I have already shown the ways in which bourgeois ideology influenced the founding and shaping of Central High School -- producing the school's high commodity value on the educational marketplace and its dedication to the principle of pedagogical meritocracy. And now its devotion to a practical curriculum can also be seen as a consequence of these same values. It should be noted that I am explaining the practical course in terms of its ideological inputs rather than its occupational outputs. Relatively few of Central's graduates ever became capitalists; most became business employees of one sort or another. What matters therefore is not that Central produced capitalists but that its curriculum reflected the capitalist view of the world.

The practicality of Central's curriculum was something that the high school shared with other secondary schools of the period, but its uniformity was unusual, especially in the company of urban high schools. To explain this phenomenon one must turn toward the special characteristics of the high school and its city. One plausible explanation for the absence of classics at Central is that the demand for college preparatory education was already being adequately met by the city's private schools. Since other city high schools did offer classics, this argument implies that Philadelphia had an unusually large system of private secondary schools. Unfortunately systematic information about the numbers of private schools and the size of their student bodies in mid nineteenth century American cities is for the most part lacking. The only solid evidence on the subject undercuts this argument by showing that Philadelphia had a relatively small proportion of its young people enrolled in private schools. The 1850 census included a special schedule for schools which facilitates the comparison of private school enrollments between cities. In that year only 10.4% of Philadelphia schoolchildren under 20 years of age were enrolled in private schools, compared with 12.2% in Boston and 18.3% in New York.(54)

A second reason for Central's narrow focus on the practical course is easier to substantiate. For if bourgeois culture in America was practical by nature, the

Philadelphia variant of this culture was particularly so. Baltzell, in his study comparing the upper class cultures of Philadelphia and Boston, attributes the intense practicality of the former city to its Quaker roots. He notes that members of Philadelphia's leading families devoted themselves single-mindedly to the pursuit of private gain in the worlds of business and law while their counterparts in Boston were much more likely to expend their energies in such "impractical" fields as politics, religion, the arts, the judiciary and education. Thus the dominant culture in Philadelphia placed the highest value on producing men of affairs from the city's schools while the dominant culture in Boston placed the highest value on producing men of letters. This difference helps explain why the Philadelphia system of public education culminated in the practical course at Central High School while the Boston system culminated in the classical course at Boston Latin School.(55)

The third and particularly important reason for the absence of a college-preparatory curriculum at the early Central High School is that Central had no need to supply colleges with students since it was in a position to compete successfully with these same colleges. I wish to argue that the claim made by Central supporters in the mid nineteenth century that the school acted as a "people's college" (a claim also frequently made about other city high schools during the period) should be taken quite seriously. Central and the local institution of higher education -- the University of Pennsylvania -- were pursuing students in the same age group. A recent study shows that while most middle-Atlantic colleges colleges in the mid nineteenth century admitted students at the average age of 19, the University of Pennsylvania admitted them at 16; thus the typical 14 or 15 year-old new student at Central was only a year or two younger than his counterpart at Penn.(56) Not only did Central and colleges compete for the same students but Central's diploma was granted equal legal status with a college diploma when the state legislature gave the school the right to confer academic degrees in 1849. That the classical course was abandoned only seven years later suggests that the school was able to translate this formal equality into a strong position in the collegiate marketplace.

The primary source of support for Central's claim to college status was its dedication to a practical curriculum. Colleges in the mid nineteenth century were, like the early high school, characterized by a uniform curriculum (loose classification). However in contrast with Central's emphasis on practical learning and meritocracy, the integrating ideology of the colleges focused on a mental and moral discipline grounded in classical learning and pietistic religion. Thus while the colleges were offering a highly traditional education divorced from the daily concerns of Philadelphia's middle classes (strong framing in Bernstein's terms), Central offered a comparatively modern and useful education geared more closely to the experience of its clientele of proprietors and business employees (weak framing).

I wish to argue that with other factors being equal, Philadelphia's practical-minded middle classes would be at least as likely to choose Central for their sons as a traditional college. The choice was essentially one between the relative usefulness of a Central education and the prestige of a college's classical course. I agree with Young that the status value of knowledge is directly proportional to its dissociation from common sense (or, in Bernstein's terms, to the strength of the frame).(57) Thus the very remoteness and abstractness of the classical course accorded it a higher status than the staunch modernity and commercial relevance of the Central course. But these same characteristics are what made Central's curriculum more practical than that of its collegiate competitors. In the absence of data on the background of contemporaneous college students there is no way to resolve the manner in which this choice of Central or college was actually made. However one can speculate that, with all else equal, families during this era would tend to choose Central's practical course because they had a strong ideological commitment to the bourgeois notion of practicality and because they were more worried about class survival than status enhancement and thus sought an educational edge in the job market.

Other factors, however, were not equal. Compared with colleges, Central High School offered a legally equivalent form of credentials and what appears to an attractive alternative form of education, but in other ways the high school had a decided edge. First, of course, it was free -- no small consideration. Second, it gave parents the option of gaining a college education for their sons while keeping them at home. The mid nineteenth century was a time when the middle class family was showing increasing reverence for the principle of domesticity, characterized by a general withdrawal from public life into the family and by the lengthening of the time that children remained at home.(58) Under such conditions the high school offered middle class families an appealing alternative to the prospect of boarding one's son at a distant college. Of course, one could keep him at home and send him to the nearby University of Pennsylvania, but here a third disadvantage of the college option was encountered -- the chaotic and undisciplined character of student life in such places. As Bledstein has so vividly shown, mid-century college life was wholly lacking in the traits of self-discipline and respect for authority which the newly domesticated middle classes so avidly were seeking to instill in their children.(59) Central on the other hand offered a carefully regulated environment and complex system of discipline which were thoroughly congruent with the inculcation of these traits.

One last advantage which Central had over its collegiate competition was the stability in the value if its credentials compared with the rampant devaluation which afflicted the market in college credentials. Collins has shown that the number of colleges and universities in the United States in the third quarter of the nineteenth century grew considerably faster than the population. In 1850 there were only 5.2 colleges per million in the population, but by 1880 there number had grown to 16.1 per million, a proportion that has never been exceeded. With the supply of colleges outpacing the demand by such an extraordinary degree, the natural result was the marked decline in the status value of a college degree.(60) The market analogy is particularly appropriate here because what a college degree offered in the era of classical training -- prestige -- is a commodity whose value is wholly determined by the vagaries of the market. Such a degree provided little practical use-value to the student.

By contrast, what Central offered in the practical era -- preparation for business -- had a use-value which was resistant to the ups and downs of the market in status symbols. And although the value of its credentials as a commodity in the status market was lowered relative to the colleges by the absence of classics, Central's unique position within the school system and its distinctively meritocratic procedure helped bridge the status gap. As a use-item a Central diploma attested to a degree of practical skill attainment. As a commodity it accorded the owner the status of having attended an institution without peer, the only public high school for boys in the nation's second largest city, a distinction achieved by only 1% of that city's public school population. Also as a commodity the Central degree identified the bearer as a person of high scholarship, since (both in public perception and in fact) only very good students gained admission to the school and none but the very best students succeeded in graduating. A college degree could rarely be said to attest to any of these qualities much less all of them. The classical curriculum precluded usefulness; the glut of colleges precluded exclusiveness; and the lack of rigor plus the absence of public scrutiny precluded the certification of merit.

Summary: Central High School offered a practical course in the nineteenth century for the same reason that most other high schools did -- as an expression of bourgeois values and as a means of providing business-related skills. Unlike most other high schools, Central did not offer in addition a college-preparatory classical course primarily because it was acting as a college in its own right. Central offered students an alternative means of earning a college degree which was in many ways more attractive than that provided by the traditional colleges. The advantages of the high school to middle class families included no tuition, retention in the home, firm discipline, the acquisition of practical skills, uniqueness and the certification of merit. The sole advantage of the colleges derived from the traditional prestige associated with the classical curriculum. As a result the high school was able to ignore the classics and thrive while a large number of college were quietly failing.

Reasons for the Changeover to a Differentiated Academic Curriculum

There are three primary reasons for the abandonment of the uniform practical curriculum at Central High School in favor of the differentiated academic course. First, this change can be seen as a consequence of what Bernstein has identified as the inherent organizational vulnerability of a school structured around an integrated code. Second, it can be seen as an effort by supporters to elevate the high school through its curriculum in response to the school's steady decline in system influence. Third and most important, it should be interpreted as a result of the reduction in value of Central credentials brought about by the vigorous competition from universities and manual training schools.

Bernstein has noted that a school with an integrated code is organizationally vulnerable because in order to survive it must maintain a strong ideological concensus -- by socializing its teachers into this ideology and then perpetuating rituals of resocialization. Under a collection code a school-wide concensus is unnecessary, but a concensus at the department level occurs naturally as a result of the disciplinary socialization teachers receive before their arrival at the school. From the organizational portrait of the two codes one can infer that the concensus in a school with an integrated code would be disturbed if a significant number of teachers were not adequately socialized into the school's ideology. One can also infer that the threat to concensus in this case would be even greater if some of the teachers were in fact socialized into the alternative ideologies of their respective academic specialties. Both of these conditions characterized the Central High School faculty in the 1880s.

The primary way that the high school assured itself of a well-socialized faculty was by preferentially hiring its own graduates. That select group of men who survived the rigors of the high school were in the process likely to have been successfully socialized into principles of practical education and meritocracy. (A secondary means of achieving the same end was to give hiring preference also to grammar school principals from Philadelphia public schools, who tended to experience anticipatory socialization into the ideology of the professors, the objects of their emulation.) If the non-alumni Central professors therefore constituted a potentially unsocialized group within the faculty, those professors who attended college constituted a potentially counter-socialized group -- one with loyalties to the discipline more than the school. Both posed the possibility of discord within an integrated organizational structure which demanded concensus. These discordant elements crystallized around the issue of curriculum change in 1887 and the new academic course was a precipitate.

The final vote on the issue was eight in favor of an academic course and six in favor of retaining the practical course. In line with the inferences drawn from Bernstein's analysis, the bulk of the unsocialized and counter-socialized professors voted to abandon an integrated code and move toward a collection code. Four of the five non-alumni on the faculty voted with the majority along with five of the seven college graduates. (These are overlapping categories.)

One can conclude from this evidence that the maintenance of Central's integrated code required the preservation of the orthodoxy of practical education. The school was simply unable to tolerate the presence of heterodoxy or agnosticism within its ranks and continue to retain its integrated form. When an ideological crisis point was reached, the school shifted toward a collection code -- because the strength-in-uniformity of the integrated code had been irretrievably broken, because the college graduates were already socialized in the new direction and because the organizational structure of the new code was able to tolerate the faculty's ideological diversity.

A second reason for the transformation of Central's curriculum was the unwillingness of the school's faculty, parents and alumni to see it slip from its once proud position as the capstone of the Philadelphia school system. For its first 30 years, Central High School dominated the public schools of Philadelphia by acting as an object of emulation. Students and grammar school masters alike competed vigorously to be accepted by a high school which had a great deal to offer and which occupied a position without peer. The system's governing board needed Central's indirect influence over the lower schools because of its own lack of direct authority. But when in 1867 the school board won its freedom from political dependency on the ward boards, it began immediately to cut through the props supporting Central's power within the system. First it put constraints on the emulative process by imposing quotas on the once freely competitive process of admissions testing; and then in 1883 it hired the system's first superintendent of schools, whose expanding bureaucratic authority posed a growing threat to Central's retreating market power. Two years later Central Manual Training School was opened, and for the first time the high school found itself engaged in rivalry with another public secondary school.

Given these circumstances, the decision by the majority of Central's faculty in 1887 to transform the curriculum from practical to college preparatory can be interpreted in part as an attempt to restore Central to its traditional position at the top of the educational pyramid. There was both a precedent and a ready meritocratic rationale for such a move. Manipulating Central's curriculum had for a time been the only way to govern lower school instruction. And when the last wholesale elevation of the high school's curriculum took place in 1849, the move was explained as a way to raise the incentives for students seeking admission and to upgrade the entire grammar-school course of study. The difference in Central's elevation in the 1880s however was that this time the school was not leading the change but was part of its rear guard. The superintendent had already raised the standards in the elementary course of study through direct action and was expressing dissatisfaction with the laggardness of the high school's faculty.

And then came the manual training school. Not only was there now a competitor in the secondary school ranks, but the focal point of this school's curriculum, manual training, could all too easily be read as a natural extension of the high school's own tradition of practical education. In order to avoid being lost in the crowd of coming secondary schools, Central (viewed from an organizational perspective) had little choice but to fall back on an old expedient and elevate the curriculum. Continuing as a haven for practical education, it would look too much like just another manual training school; but as a college preparatory school with an academic program purified of any hint of vocationalism, Central could once again assume its proper place at the pinnacle of the educational pyramid.

The transformation had the desired organizational effect, at least for a time. Until 1912, when all distinctions among the city's high schools were erased, Central managed to retain its unique position as the only four-year high school with a full academic course of study. Its elevated curriculum enhanced its prestige and helped cement the support of its traditional proprietary middle class clientele, but it failed to produce the dividends in organizational power that had resulted from the 1849 elevation. Bureaucratic authority over the school system had simply grown too strong by the last decade of the nineteenth century, and the high school's last lever of emulative control over the lower schools was lost when the admissions exam was finally abolished in 1900.

For Central supporters, the natural response to these setbacks in the school's influence within the system was to push for the elevation of the school (by way of its curriculum) to an even higher level, from college preparatory high school to junior college. From the 1890s to the 1940s these supporters argued aggressively for city college status. In one sense of course these arguments fell on deaf ears, for Central remains a high school today; and when a city college did finally arise in Philadelphia (Community College of Philadelphia) it did not emerge from Central but was created de novo. Yet in another sense, while losing the battle of the city college, the school's supporters won the war of organizational position. For in 1935 the school board voted to restore Central to its long-accustomed rank as the number one high school for boys in the city by re-establishing an academic curriculum (unfettered by vocational courses), selective admissions and city-wide drawing power. This position no longer carried with it the autonomy within the system or the power over lower schools enjoyed by Central in the nineteenth century, for the subordination of all the city's schools to the superintendent's authority was by now complete. Yet the change did at least accord Central the status of first among equal subordinates.

A third reason for the change in the curriculum at Central High School is the transformation of the relationship between the school and the university. The university emerged from the mass of American colleges in the second half of the nineteenth century to assume a dominant position within the country's system of education.(61) In one sense the curriculum of this new institution seemed to be converging with Central's, for the strictly classical course of the old college was being discarded in favor of a more practical program stressing subjects also favored by the high school such as science and modern languages. Yet in other ways the university was developing in a direction quite different from Central's practical curriculum. One sign of this was that while the old college course had been weakly classified and the high school course continued to hold this form, the universities were moving quickly toward strong classification. Their faculties were becoming dominated by research-oriented specialists in narrowly defined fields, and the earlier teaching-oriented generalists were being compelled to adapt or leave (as happened to Central President Robert Ellis Thompson when he taught at the University of Pennsylvania). Another sign was the development of graduate schools of arts and sciences, which raised scholarship to a more advanced level and enhanced the prestige of the whole university community. One effect of this last change was the erection of a clearly defined educational hierarchy: universities began to require a bachelor's degree for admission to the new graduate schools (and also the older professional schools), and at the same time they sought to establish a high school diploma as the standard for admission to undergraduate programs. (The latter was one of the primary aims of the National Education Association's influential Committee of Ten on Secondary School Studies.)

The institution which emerged from this process of evolution -- the modern American university -- was in a considerably stronger position in the educational market than mid-century colleges had been. The two most telling competitive disadvantages suffered by the latter schools were transformed into the strongest selling points of the new form of higher education. The bald impracticality of the former classical curriculum was exchanged for a degree of contemporary relevance in the form of a modern scientific program of studies. In addition the problem of an over-supply of carbon-copy colleges was solved by the invention of the graduate school. This change provided universities with a new and scarce curricular commodity to offer to prospective students. Also, the resulting subordination of colleges to graduate schools and high schools to colleges gave universities a highly marketable image as the seat of power and the source of excellence in education.

As a consequence of these curriculum changes, both the use-value and the commodity-value of university credentials soared in the years after the Civil War. During the same period, however, the curriculum of Central High School remained the same, and thus its ability to compete in the college credential market was sharply impaired. The former competitive advantage over classical colleges which derived from its practical course was turned into a disadvantage by the new university curriculum. The latter not only matched the high school's practicality but it offered these studies at a considerably more advanced level. In addition the high school's advantage as a unique commodity -- the only public high school in the city -- ended, as discussed earlier, with the opening of Central Manual Training School in 1885 and the promise of more such schools in the near future. As a result the commodity value of Central's credentials within the school system was in decline, and at the same time the practical form of curriculum at the manual training school even undermined the use-value of a Central education. It should be recalled that Central had never had to compete with other public schools before. The high school had always towered over the other schools in the Philadelphia system; it was colleges that it traditionally competed with, yet here too its position was slipping badly. The high-powered practicality and marketable scarcity of university credentials combined with the loss in value of Central's credentials within the school system produced a situation in which Central was beginning to look very much like an ordinary high school rather than a people's college.

The timing of the loss in value of Central's credentials closely coincided with the decision to abandon the practical curriculum. The two events which most contributed to this loss were the emergence of the university and the opening of the manual training school. Veysey places the era of the rise of the university during the years between 1865 and 1890. The faculty vote in favor changing the curriculum took place in 1887, near the end of this period, at the point where the university was becoming a major force in educational life. And the opening of the manual training school occurred in 1885, just two years before the vote. I suggest that these events are causally related.

It is my argument that the best single explanation of the change in curriculum at Central High School is the loss in value of the school's credentials. The practical course had one been a source of market strength for the school; but when this course was copied by the new manual training school and superceded by the universities, it became an important factor in the high school's decline in stature. Those statements from concerned citizens in the 1880s (quoted earlier) about Central's academic slippage should be interpreted in this light. As has been shown, the changes in curriculum during the practical era were rather small and thus the decline of the school should be seen in relative rather than absolute terms -- not a loss in the absolute use-value of the practical course but a loss in the relative status-value of a Central diploma on the educational credentials market. From the credentials viewpoint, therefore, the old curriculum had to go.

This still leaves open the question of why the new curriculum took the form of a college-preparatory and differentiated course. The key to an answer to this question lies in the considerable market power of the university. Like other high schools at the same time, Central found itself unable to compete at the elevated level established by the university. Given this situation, the high school had two choices. It could continue offering a terminal course, but this would mean denying the city's students access to those desirable university credentials and perpetuating a course that had already lost credibility. Or it could actively participate in its subordination to the university by reorganizing its curriculum to meet the latter's admissions requirements. Central had little alternative but to take the second path. Note that within the school system and within the credentials market the curriculum change constituted an elevation of the school; but these gains were made at the cost of subordination, not just to the university but to colleges in general. Becoming a college-preparatory school meant giving up the claim to being a college and accepting the categorical status of high school. Given the size of this concession, it is little wonder that the movement to make Central a college by extending its curriculum was initiated very quickly after the new curriculum was installed.

While the shift toward college preparation can be seen as a move toward stronger framing, since it involved a more distinctly academic as opposed to community orientation, the change also brought stronger classification. Again the market power of the university left Central (and other high schools) with little choice but to fall in line. If a high school was to prepare students for college, it had to teach college courses in the college fashion (that is, as separate disciplines) and use college-trained teachers (who had been socialized into the ways of the collection code).

Central's devalued credentials thus help explain why the school opted for a differentiated college-preparatory curriculum in the late 1880s. This curriculum change in turn produced a new stratified pattern of credentials for the school. The dominant position within the new curriculum was held by the academic course. Both the infusion of classics into this course and its new orientation toward a university standard of knowledge rather than a community standard signals a strengthened frame and accords the course a relatively high status. The purpose of the academic course was not to provide students with occupational skills but to give them access to college. As a result the credentials offered by the course were not valued as a certificate of skill acquisition but as a means of capturing higher level credentials. In contrast the commercial course was even more practical than the old practical course, augmenting the number of strictly vocational courses and tailoring academic subjects to the commonsense needs of the businessman. Thus the course was characterized by an even weaker frame and lower status than the practical course. Providing the student with useful skills was the whole reason for the course's existence; thus the credentials it offered attested to these skills but could not be exchanged for more credentials in the educational commodity market.

TABLE 4.1

ALLOCATION OF COURSE YEARS TO SUBJECT AREAS IN SELECTED CURRICULA BY ADMINISTRATION, 1840-1920(a)

(Percentage by curriculum)(b)

CURRICULUM	SUBJECT AREAS							
	Class Lang	Mod Lang	English	History	Science	Vocation	Other	Course Years
Bache, 1840(c)								
Classical	21	0	11	15	46	0	7	(107)
Principal	0	21	11	15	46	0	7	(107)
Hart, 1850								
Classical	16	5	11	14	34	12	8	(37)
Principal	0	21	11	14	34	12	8	(37)
Maguire, 1863								
Principal	13	13	10	13	32	5	13(d)	(30)
Riché, 1871								
Principal	10	8	13	13	33	10	13	(31)
Johnson, 1889								
Classical	21	3	12	15	38	0	12(d)	(34)
Regular	12	9	12	15	38	0	12(d)	(34)
Chemistry/physics	4	9	11	14	49	0	11(d)	(35)
Scientific	6	9	18	15	41	0	12(d)	(34)

TABLE 4.1 (cont.)

CURRICULUM	SUBJECT AREAS							
	Class Lang	Mod Lang	English	History	Science	Vocation	Other	Course Years
Thompson, 1900								
Classical	25(e)	4	14	14	36	0	7	(28)
Latin scientific	14	7	14	14	45	0	7	(29)
Modern languages	7	17	14	14	41	0	7	(29)
Commercial	3	17	14	21	21	17	7	(29)
Haney, 1920-24(f)								
Academic	11	5	19	11	35	0	19(d)	(37)
Commercial	0	8	18	8	18	21	28(d)	(39)
Mechanical	0	10	18	10	20	20	23(d)	(40)
Industrial	0	0	22	6	17	42	14(d)	(36)

Sources: Figures 4.1 to 4.6

a. Course years are the total number of years of study devoted to a particular subject within a four-year course of study.

b. Percentages may not total 100% across rows because of rounding.

c. These percentages are calculated from course hours (using figure 4.1) rather than the course years used for other administrations.

TABLE 4.1 (cont.)

d. Course years overestimate the true number of course hours spent on this subject; see Table 4.8.

e. Course years underestimate the true number of course hours spent on this course, which was actually 35%; see Table 4.8.

f. Unlike the other six administrations, the course years for Haney were estimated from the subjects taken by a sample of students in each curriculum drawn from the student dataset (class entering 1920).

TABLE 4.2

STUDENTS BY CURRICULUM AND BY GRADE LEVEL: A CROSS-SECTIONAL VIEW OF THE 1850 STUDENT BODY

COURSE	GRADE LEVEL				
	Freshman	Sophomore	Junior	Senior	Total
Principal	48.2	52.9	58.8	57.1	52.2
Classical	29.1	31.8	41.2	42.9	33.0
English	22.6	15.3	--	--	14.8
Total	99.9	100.0	100.0	100.0	100.0
N	199	176	68	42	485

Source: AR 1850, p. 143.

TABLE 4.3

INTENDED OCCUPATIONS OF CENTRAL STUDENTS, CLASS ENTERING IN 1850

Occupation	Number	Subtotal	%
Store		29	36.7
"Store"	27		
Other	2		
Clerk		15	19.0
Other white collar		8	10.1
Engineer	5		
Other	3		
Manual		27	34.2
Farmer	5		
Chemist	3		
Cabinetmaker	2		
Jeweller	2		
Blacksmith	2		
Other skilled trades	13		
Total		79	100.0
Students missing intended occupation		6	
Total class size		85	

TABLE 4.4

OCCUPATION OF ORIGIN AND INTENDED OCCUPATION, CLASS ENTERING IN 1850

	OCCUPATION OF ORIGIN						
	Professionals	Proprietors	Manufacturers	Mid Class Employees	Skilled Workers	Unskilled Workers	Missing
Store	16.7	50.0	40.0	60.0	25.0	100.0	25.9
Clerk	16.7	18.8	10.0	20.0	16.7	0.0	25.9
Other middle class	16.7	6.3	20.0	20.0	8.3	0.0	7.4
Manual	50.0	25.0	30.0	0.0	50.0	0.0	40.7
Total	100.1	100.1	100.0	100.0	100.0	100.0	99.9
N	6	16	10	5	12	3	27

TABLE 4.5

ALLOCATION OF COURSE YEARS TO SUBJECT AREAS BY CURRICULUM ACCORDING TO MINORITY FACULTY PROPOSAL, 1887

(Percentage by curriculum)

CURRICULUM	SUBJECT AREAS							
	Class Lang	Mod Lang	English	History	Science	Vocation	Other	Course Years
Minority Plan, 1887								
University	13	17	17	17	27	0	9	(22)
General	7	10	14	17	45	0	7	(29)

Source: "Report of the Minority of the Faculty of the Central High School to the Committee on Central High School" (n.p., 1887).

TABLE 4.6

STUDENTS BY CURRICULUM AND BY GRADE LEVEL: A CROSS-SECTIONAL VIEW OF THE 1893 STUDENT BODY

COURSE	GRADE LEVEL			
	Freshman	Sophomore	Junior	Senior
Classical	--	29.9	54.5	50.0
Regular	82.6	55.1	20.3	16.3
Physics	--	--	7.3	18.8
Chemistry	--	--	8.1	3.8
Scientific	17.4	15.0	9.8	11.3
Total	100.0	100.0	100.0	100.2
N	350	234	123	80

Source: Central High School Catalogue, 1893-1894.

TABLE 4.7

ALLOCATION OF COURSE HOURS TO SUBJECT AREAS IN SELECTED CURRICULA BY ADMINISTRATION, 1840-1920(a)

(Percentage by curriculum)(b)

CURRICULUM	SUBJECT AREAS							
	Class Lang	Mod Lang	English	History	Science	Vocation	Other	Course Hours
Bache, 1840								
Classical	21	0	11	15	46	0	7	(107)
Principal	0	21	11	15	46	0	7	(107)
Hart, 1850								
Classical	18	2	9	14	38	12	8	(222)
Principal	0	20	9	14	38	12	8	(222)
Maguire, 1863								
Principal	14	14	9	13	38	5	5	(202)
Riché, 1871								
Not available								
Johnson, 1889								
Classical	25	4	13	15	36	0	7	(92)
Regular	14	11	13	15	40	0	7	(92)
Chemistry/physics	6	11	13	15	49	0	5	(93)
Scientific	7	11	18	16	42	0	7	(90)

TABLE 4.7 (cont.)

CURRICULUM	SUBJECT AREAS							
	Class Lang	Mod Lang	English	History	Science	Vocation	Other	Course Years
Thompson, 1900								
Classical	35	4	13	11	33	0	5	(83)
Latin scientific	16	7	13	11	48	0	5	(85)
Modern languages	10	16	12	11	46	0	5	(82)
Commercial	4	19	11	21	24	16	4	(94)
Haney, 1920-24								
Not available								

Sources: Figures 4.1 to 4.3, 4.5 and 4.6.

a. Course hours are the total number of classroom hours devoted to a particular subject within a four-year course of study.

b. Percentages may not total 100% across rows because of rounding.

TABLE 4.8

ALLOCATION OF COURSE HOURS TO SUBJECT AREAS BY CURRICULUM, COMMITTEE OF TEN PLAN COMPARED WITH THOMPSON COURSE OF STUDY

(Percentage by curriculum)(a)

CURRICULUM	SUBJECT AREAS							
	Class Lang	Mod Lang	English	History	Science	Vocation	Other	Course Hours
Committee of Ten, 1894(b)								
Classical	35	14	14	10	28	0	0	(80)
Latin Scientific	23	14	16	9	39	0	0	(80)
Modern Languages	0	36	16	9	39	0	0	(80)
English	8	15	20	18	40	0	0	(80)
Thompson, 1900								
Classical	35	4	13	11	33	0	5	(83)
Latin Scientific	16	7	13	11	48	0	5	(85)
Modern Languages	10	16	12	11	46	0	5	(82)
Commercial	4	19	11	21	24	16	4	(94)

Source: Edward A. Krug, The Shaping of the American High School, 1880-1920 (Madison: University of Wisconsin Press, 1964), pp. 61-62 and Table 4.7.

a. Percentages may not total 100% across rows because of rounding.

b. Electives have been divided among the optional subject areas.

TABLE 4.9

CLASS DISTRIBUTION OF CENTRAL STUDENTS BY CURRICULUM, 1890-1920

(Percentage by year and curriculum)

CLASS	1890		1900		1910		1920			
	Academic	Scientific	Academic	Commercial	Academic	Commercial	Academic	Commercial	Mechanical	Industrial
Proprietary middle class	57.3	35.3	52.7	34.9	53.3	50.8	51.8	50.0	50.0	26.1
Employee middle class	19.1	26.5	24.3	20.9	24.8	19.5	20.3	12.5	21.7	23.0
Skilled working class	21.3	35.3	21.6	30.2	17.1	24.6	18.1	26.7	16.7	37.6
Unskilled working class	2.2	2.9	1.4	14.0	4.8	5.1	9.7	10.8	11.7	13.3
Total	99.9	100.0	100.0	100.0	100.0	100.0	99.9	100.0	100.1	100.0
N	178	68	296	172	210	118	237	120	60	165
Missing	38	2	60	12	23	9	22	12	10	35

TABLE 4.10

INDEX OF CLASS REPRESENTATIVENESS OF CENTRAL STUDENTS BY CURRICULUM, 1890-1920(a)

CLASS	1890		1900		1910		1920			
	Academic	Scientific	Academic	Commercial	Academic	Commercial	Academic	Commercial	Mechanical	Industrial
Proprietary middle class	1.25	.77	1.15	.76	1.05	1.00	1.17	1.14	1.14	.59
Employee middle class	.95	1.31	.98	.84	1.06	.83	1.02	.63	1.09	1.49
Skilled working class	.86	1.42	.90	1.26	.85	1.22	.72	1.06	.66	1.49
Unskilled working class	.71	.93	.26	2.59	.89	.94	.89	.99	1.07	1.22

Sources: Tables 4.9 and 3.3.

a. Index of representativeness is formed by dividing the proportion of students in a given class for a particular year and curriculum by the proportion of students in that class for all curricula in the same year.

TABLE 4.11

GRADUATION RATE AND TOP GRADES RATE OF CENTRAL STUDENTS BY CURRICULUM, 1890-1920

	1890		1900		1910		1920			
	Academic	Scientific	Academic	Commercial	Academic	Commercial	Academic	Commercial	Mechanical	Industrial
Graduation rate	30.6	8.6	34.8	21.7	41.2	25.2	40.7	11.4	35.7	15.0
Top grades rate(a)	22.2	8.7	10.1	10.9	44.2	26.8	18.1	5.1	16.7	13.3

a. Percentage of students who ever achieved a term average of 85 or more.

TABLE 4.12

PROPORTION OF ENTRANTS AND GRADUATES BY CURRICULUM, 1890-1920

	1890		1900		1910		1920	
	Entrants	Grads	Entrants	Grads	Entrants	Grads	Entrants	Grads
Academic	75.5	91.7	65.9	75.6	64.7	75.0	39.1	60.0
Commercial	24.5	8.3	34.1	24.4	35.3	25.0	19.9	8.6
Mechanical	--	--	--	--	--	--	10.6	14.3
Industrial	--	--	--	--	--	--	30.3	17.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	99.9	100.0
N	286	72	540	164	364	128	661	175
Missing	14	0	56	0	36	6	29	0

TABLE 4.13

NUMBER OF TERMS REPEATED

BY GRADUATES AND NON-GRADUATES, 1910

Terms Repeated	1910					
	Graduates		Non-Graduates		Total	
	N	%	N	%	N	%
0	90	67.2	134	51.1	224	56.6
1	23	17.2	79	30.2	102	25.8
2	14	10.4	36	13.7	50	12.6
3	3	1.5	11	4.2	14	3.5
4	2	1.5	2	0.8	2	0.5
5	2	1.5	0	0.0	2	0.5
Total	134	100.0	262	100.0	396	100.0
% of grand total:		33.8		66.2		

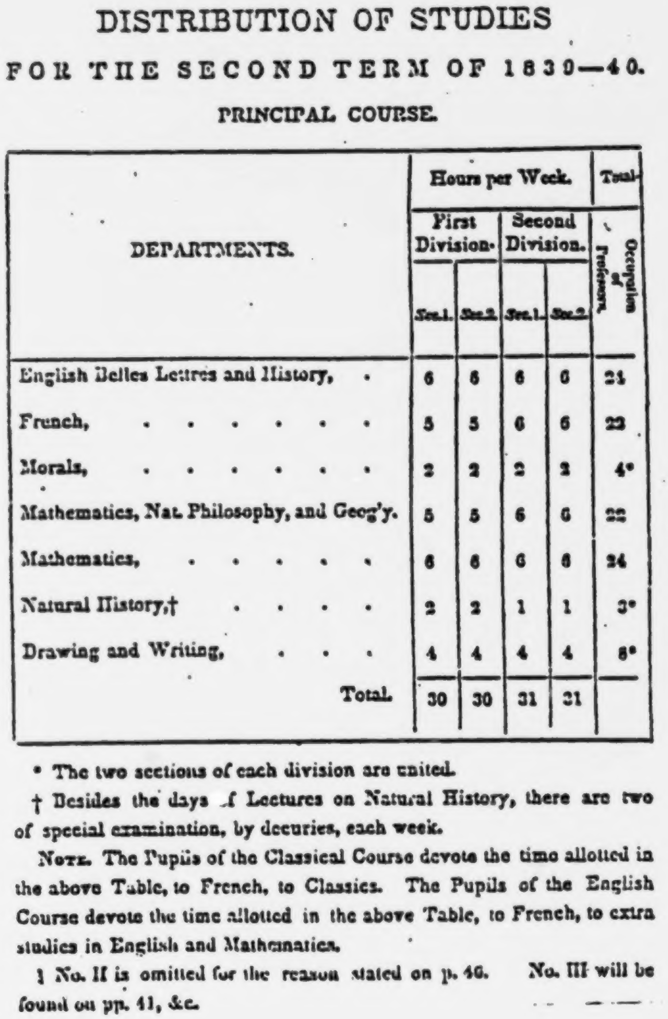
TABLE 4.14

OCCUPATIONS OF CENTRAL ALUMNI, CLASS ENTERING IN 1900, BY CLASS OF ORIGIN

OCCUPATION	CLASS OF ORIGIN				
	Prop MC	Employ MC	Skill WC	Unskill WC	Missing/ other
Professional	35.6	42.3	36.0	60.0	33.3
White collar supervisor	22.0	30.8	28.0	0.0	66.7
White collar employee	32.2	26.9	32.0	40.0	0.0
Other	10.2	0.0	4.0	0.0	0.0
Total	100.0	100.0	100.0	100.0	100.0
N	59	26	25	5	6

FIGURE 4.1

COURSE OF STUDIES, 1840



DISTRIBUTION OF STUDIES

FOR THE SECOND TERM OF 1839—40.

PRINCIPAL COURSE.

DEPARTMENTS.	Hours per Week.				Total
	First Division.		Second Division.		Occupation of Professors.
	Sec. 1.	Sec. 2.	Sec. 1.	Sec. 2.	
English Belles Lettres and History,	6	6	6	6	24
French,	5	5	6	6	22
Morals,	2	2	2	2	4*
Mathematics, Nat. Philosophy, and Geog'y.	5	5	6	6	22
Mathematics,	6	6	6	6	24
Natural History,†	2	2	1	1	3*
Drawing and Writing,	4	4	4	4	8*
Total.	30	30	31	31	

* The two sections of each division are united.

† Besides the days of Lectures on Natural History, there are two of special examination, by decuries, each week.

Note. The Pupils of the Classical Course devote the time allotted in the above Table, to French, to Classics. The Pupils of the English Course devote the time allotted in the above Table, to French, to extra studies in English and Mathematics.

‡ No. II is omitted for the reason stated on p. 46. No. III will be found on pp. 41, &c.

Source: A.D. Bache, Report to the Controllers of the Public Schools on the Reorganization of the Central High School of Philadelphia, December 10, 1839 (Philadelphia: Board of Controllers, 1839), p. 52.

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FIGURE 4.2

COURSE OF STUDIES, 1850

COURSE OF STUDIES IN THE CENTRAL HIGH SCHOOL OF PHILADELPHIA.

DIVISIONS.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
	Prof. Bregy.	*Prof. Haverstick.*	*Prof. Rhoads.*	*Prof. Hart.*	*Prof. Kirkpatrick.*	*Prof. Kendall.*	*Prof. Vogdes.*	*Prof. Becker.*	*Prof. M'Murtrie.*	*Prof. Boye.*
A.	(A pr.) Spanish; Don Quixote, 2 lessons a week. — French; Picot's Rec. Scient. 2 lessons a week. — Lectures in French, once a week.	(A el.) Greek; Xenophon's Cyropaedia, 3 lessons a week. — Latin; Horace's Satires, 2 lessons a week.	Composition once a week. — Elocution once a week. — History of Civilization, (Guizot.) twice a week.	Anglo-Saxon Gospels, once a week.	Political Economy; (Wayland,) 3 lessons a week.	Practical Astronomy. (Gummere's,) 3 lessons a week,	Navigation; (Bowditch.) — Spherical Projections. 3 lessons a week.	Mechanical Drawing, once a week. — Designing, once a week. — Ornamental Penmanship, once a week.	Hygiene & Zoology; 2 Lectures and 2 Recitations a week.	Natural Philosophy and Chemistry; 2 Lectures and 2 Recitations a week
B.	(B pr.) Spanish; Gil Blas, 2 lessons a week. — French; Rep. de Litterature, 2 lessons a week. — Lectures in French, once a week.	(B el.) Greek; New Testament, 3 lessons a week. — Latin; Horace's Odes, 2 lessons a week.	Composition once a week. — Elocution once a week. — Logic, (Whately,) twice a week.	Anglo-Saxon; Klipstein's Analecta, once a week.	Political Economy; (Wayland,) 3 lessons a week.	Practical Astronomy, (Gummere's) 3 lessons a week. — Lectures on the Differential Calculus.	Navigation; (Maury.) — Constructions of Spherical Triangles. 3 lessons a week.	Mechanical Drawing twice a week. — Ornamental Penmanship, once a week.	Domestic Medicine and Surgery; 2 Lectures and 2 Recitations a week.	Natural Philosophy and Chemistry; 2 Lectures and 2 Recitations a week
C.	(C pr.) Spanish; Spanish Hive, 3 lessons a week. — French; Gil Blas. 2 lessons a week.	(C el.) Greek; Greek Reader, 3 lessons a week. — Latin; Cicero's Orations, 2 lessons a week.	Composition once a week. — Elocution once a week. — Rhetoric, (Blair,) twice a week.	Anglo-Saxon; Klipstein's Analecta, once a week.	Mental Philosophy; (Upham,) 3 lessons a week.	Analytical Geometry, (Davies,) 4 lessons a week.	Surveying; (Gummere's) 3 lessons a week.	Mechanical Drawing once a week. — Drawing from solid Objects & Perspective, once a week. — Ornamental Penmanship, once a week.	Anatomy and Physiology, 1 Lecture and 2 Recitations a week.	Natural Philosophy and Chemistry; 2 Lectures and 2 Recitations a week
D.	(D pr.) Spanish; Ouhl's Gram. & Translator 3 lessons a week. — French; St. Real Conj. des Espag., 2 lessons a week.	(D el.) Greek; McClintock's First Lessons, 3 times a week. — Latin; Sallust, 2 lessons a week.	Composition once a week. — Elocution once a week. — Rhetoric, (Blair,) twice a week. — [*Prof. Heyer.*] Universal History, (Willard,) 3 times a week.	Anglo-Saxon Grammar, (Klipstein's,) once a week.	Mental Philosophy; (Upham,) 3 lessons a week.	Analytical Geometry (Davies,) 4 lessons a week.	Surveying; (Gummere's,) — 3 lessons a week.	Drawing from solid Objects & Perspective, twice a week. — Home Exercises in Penmanship and Drawing from Patterns.	Anatomy and Physiology, 1 Lecture and 2 Recitations a week.	Natural Philosophy; 1 Lecture and 1 Recitation a week

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FIGURE 4.2 (cont.)

COURSE OF STUDIES IN THE CENTRAL HIGH SCHOOL OF PHILADELPHIA. (*Continued.*)

DIVISIONS.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
	Prof. Bregy.	*Prof. Haverstick.*	*Prof. Heyer.*	*Prof. Howard.*	*Prof. Rhoads.*	*Prof. Hart.*	*Prof. Kirkpatrick.*	*Prof. Kendall.*	*Prof. Vogdes.*	*Prof. Becker.*	*Prof. M'Murtrie*
E.	[E pr.] French, (5 times a week;) Charles XII, Grammar and Exercises, (Levizac & Pinney.)	[E cl.] Latin; Virgil, 5 lessons a week.	[E Eng.] Political Economy, (Wayland's abridged,) 5 times a week. — [Whole class.] Universal History, (Willard,) 4 times a week.	Arithmetic and Mensuration, (Vogdes,) reviewed twice a week.	Composition once a week. — Lectures on the History of Pennsylvania, once a week. — English Grammar, (Hart,) reviewed once a week.	Lectures once a week on the History of English Literature.	Moral Science, (Wayland,) 3 times a week.	Uranography, (Kendall,) twice a week.	Spherical Trigonometry, (Chauvenet,) 3 times a week.	Drawing from Patterns, twice a week. — Home Exercises in Penmanship.	Anatomy and Physiology; 1 Lecture and 2 Recitations a week
F.	[F pr.] French, (5 times a week;) Picot's Historical Narrations, Grammar and Exercises. (Levizac & Pinney.)	[F cl.] Latin; Caesar, (5 lessons a week.)	[F Eng.] Chemistry, (Johnston's,) 5 times a week. — [Whole class.] History of Rome, (Goldsmith,) twice a week.	History of England, (Goldsmith,) 3 times a week.	Composition once a week. — Lectures on the History of Pennsylvania once a week.	Lectures once a week on the History of English Literature.	Moral Science, (Wayland,) 3 times a week.	Algebra. (Alsop,) twice a week.	Plane Trigonometry, (Chauvenet,) twice a week.	Drawing, (Peale's Graphics,) twice a week. — Home Exercises in Penmanship.	Anatomy and Physiology; 1 Lecture and 3 Recitations a week
G.	[G pr.] French, (5 times a week;) Picot's Amusing Narrations, Grammar and Exercises. (Levizac & Pinney.)	[G cl.] Latin; First Lessons, (M'Clintock and Crook's,) 5 times a week.	[G Eng.] Chemistry, (Johnston's,) 5 times a week. — [Whole class.] Lectures once a week on the public Institutions of Philadelphia.	Book Keeping, (Becker,) 3 times a week.	Composition once a week. — History of Greece, (Goldsmith,) twice a week.	Lectures once a week on the History of English Literature.	Phonography; 1 Lecture and 2 Recitations a week. — (Booth's Instructor, Patterson's Reporter's Assistant.)	Algebra, (Alsop,) twice a week.	Geometry, (Davies' Legendre's) twice a week.	Penmanship, (Becker's,) twice a week. — Book Keeping, (Becker's,) twice a week.	Anatomy and Physiology; 1 Lecture and 3 Recitations a week
H.	[H pr.] French, (5 times a week;) Grammar and Exercises, (Levizac & Pinney.) Æsop's Fables, (Deloutte.)	[H cl.] Latin; First Lessons, (M'Clintock and Crook's,) 5 times a week.	[H Eng.] Natural Philosophy, (Coates,) 5 times a week. — [Whole class.] Lectures once a week on the public Institutions of Philadelphia.	Book Keeping, (Becker,) 3 times a week.	Composition once a week.	Lectures once a week on the History of the Public Schools of Philadelphia.	Phonography; 1 Lecture and 2 Recitations a week. — (Booth's Instructor, Andrews & Boyle's Reader.)	Algebra, (Alsop,) twice a week.	Geometry, (Davies's Legendre's,) twice a week.	Penmanship, (Becker's) once a week. — Book Keeping, (Becker's) once a week.	Elements of Special Physics; 1 Lecture and 4 Recitations a week — (McMurtrie's Scientific Lexicon.

Source: Board of Controllers of the Public Schools, Annual Report, 1850, pp. 173-174.

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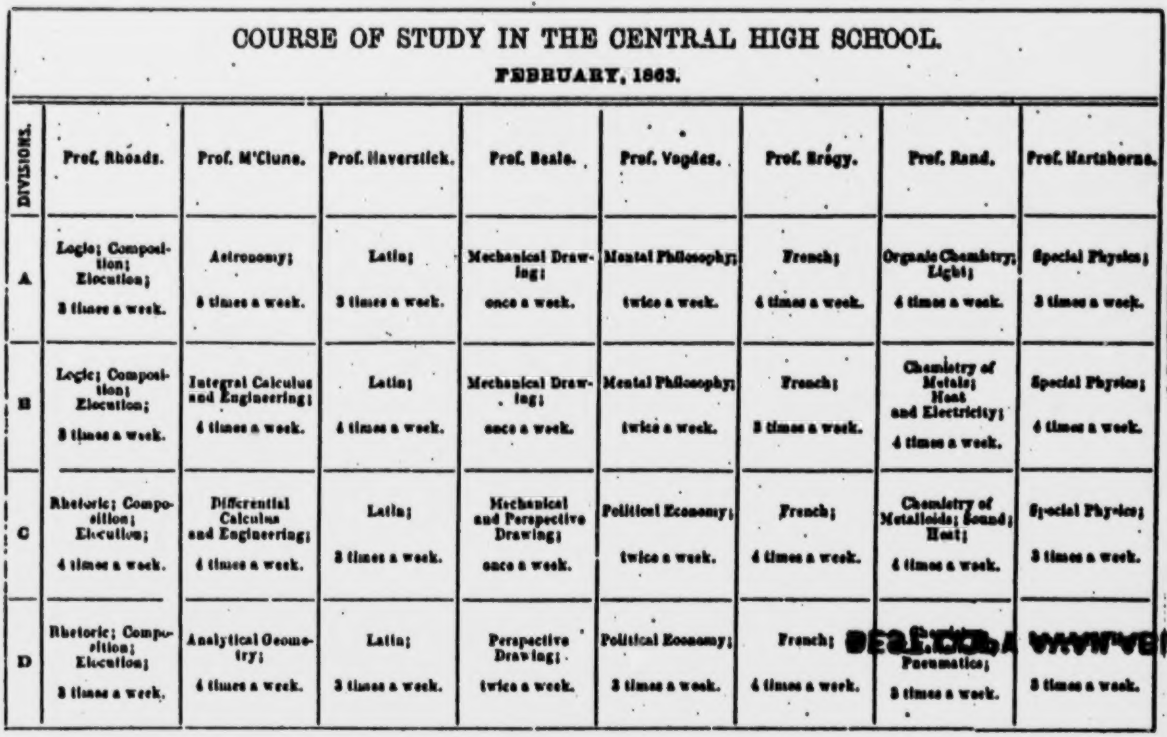
FIGURE 4.3

COURSE OF STUDIES, 1863



COURSE OF STUDY IN THE CENTRAL HIGH SCHOOL.

FEBRUARY, 1863.

DIVISIONS.	Prof. Rhoads.	Prof. M'Clune.	Prof. Haverstick.	Prof. Beale.	Prof. Vogdes.	Prof. Bregy.	Prof. Rand.	Prof. Hartshorne.
A	Logic; Composition; Elocution; 3 times a week.	Astronomy; 5 times a week.	Latin; 3 times a week.	Mechanical Drawing; once a week.	Mental Philosophy; twice a week.	French; 4 times a week.	Organic Chemistry; Light; 4 times a week.	Special Physics; 3 times a week.
B	Logic; Composition; Elocution; 3 times a week.	Integral Calculus and Engineering; 4 times a week.	Latin; 4 times a week.	Mechanical Drawing; once a week.	Mental Philosophy; twice a week.	French; 3 times a week.	Chemistry of Metals; Heat and Electricity; 4 times a week.	Special Physics; 4 times a week.
C	Rhetoric; Composition; Elocution; 4 times a week.	Differential Calculus and Engineering; 4 times a week.	Latin; 3 times a week.	Mechanical and Perspective Drawing; once a week.	Political Economy; twice a week.	French; 4 times a week.	Chemistry of Metalloids; Sound; Heat; 4 times a week.	Special Physics; 3 times a week.
D	Rhetoric; Composition; Elocution; 3 times a week.	Analytical Geometry; 4 times a week.	Latin; 3 times a week.	Perspective Drawing; twice a week.	Political Economy; 3 times a week.	French; 4 times a week.	[illegible] Pneumatics; 3 times a week.	[illegible] 3 times a week.

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FIGURE 4.3 (cont.)

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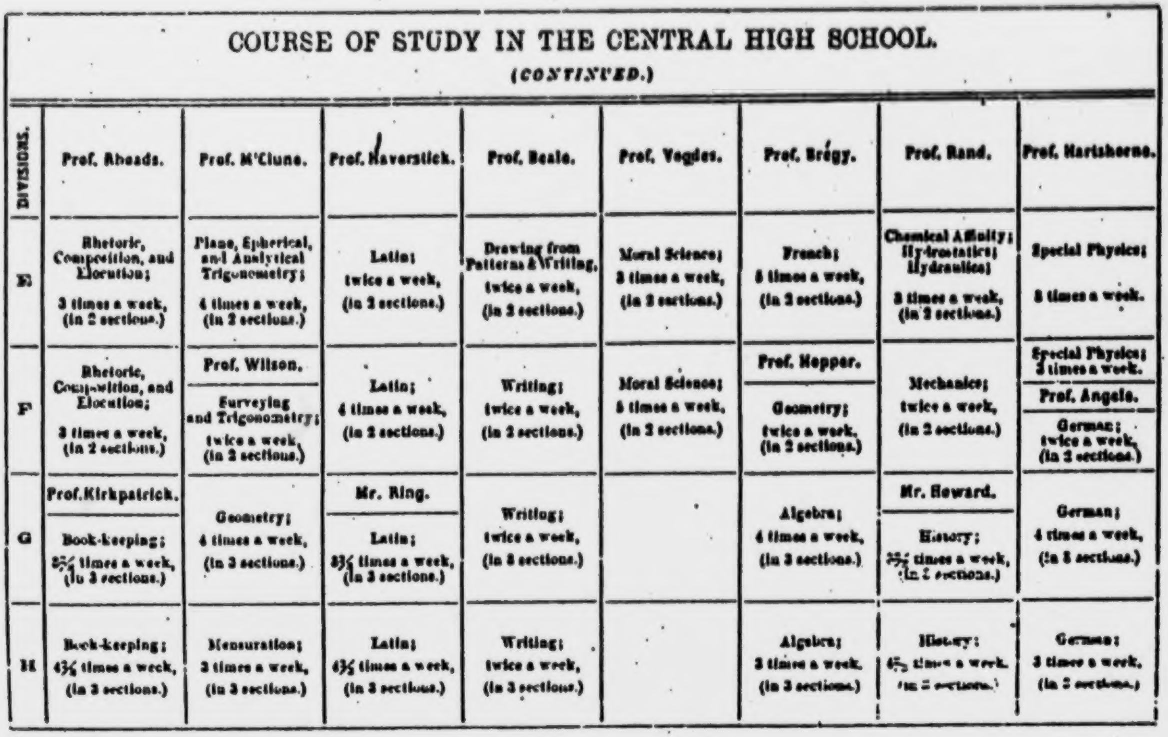


COURSE OF STUDY IN THE CENTRAL HIGH SCHOOL.

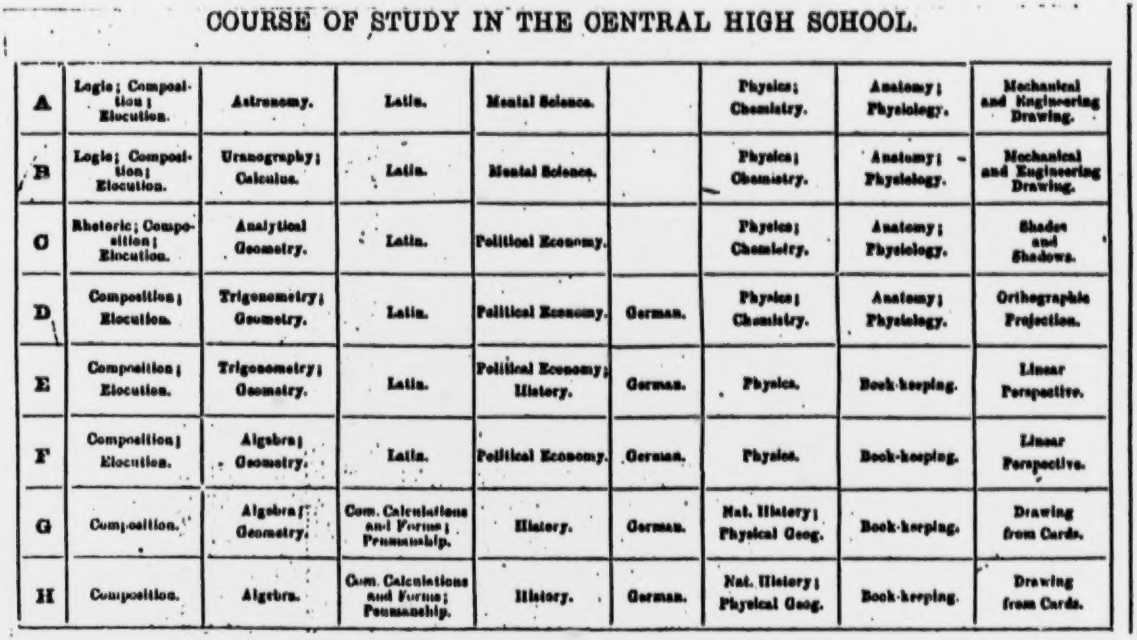
(CONTINUED.)

DIVISIONS.	Prof. Rhoads.	Prof. M'Clune.	Prof. Haverstick.	Prof. Beale.	Prof. Vogdes.	Prof. Brégy.	Prof. Rand.	Prof. Hartshorne.
E	Rhetoric, Composition, and Elocution; 3 times a week, (in 2 sections.)	Plane, Spherical, and Analytical Trigonometry; 4 times a week, (in 2 sections.)	Latin; twice a week, (in 2 sections.)	Drawing from Patterns & Writing, twice a week, (in 2 sections.)	Moral Science; 3 times a week, (in 2 sections.)	French; 5 times a week, (in 2 sections.)	Chemical Affinity; Hydrostatics; Hydraulics; 3 times a week, (in 2 sections.)	Special Physics; 8 times a week.
F	Rhetoric, Composition, and Elocution; 3 times a week, (in 2 sections.)	Prof. Wilson. Surveying and Trigonometry; twice a week, (in 2 sections.)	Latin; 4 times a week, (in 2 sections.)	Writing; twice a week, (in 2 sections.)	Moral Science; 5 times a week, (in 2 sections.)	Prof. Hopper. Geometry; twice a week, (in 2 sections.)	Mechanics; twice a week, (in 2 sections.)	Special Physics; 3 times a week. Prof. Angele. German; twice a week, (in 2 sections.)
G	Prof. Kirkpatrick. Book-keeping; 2½ times a week, (in 3 sections.)	Geometry; 4 times a week, (in 3 sections.)	Mr. Ring. Latin; 3½ times a week, (in 3 sections.)	Writing; twice a week, (in 3 sections.)		Algebra; 4 times a week, (in 3 sections.)	Mr. Howard. History; 3½ times a week, (in 2 sections.)	German; 4 times a week, (in 3 sections.)
H	Book-keeping; 4½ times a week, (in 3 sections.)	Mensuration; 3 times a week, (in 3 sections.)	Latin; 4½ times a week, (in 3 sections.)	Writing; twice a week, (in 3 sections.)		Algebra; 3 times a week, (in 3 sections.)	History; 4½ times a week, (in 2 sections.)	German; 3 times a week, (in 2 sections.)

Source: Board of Controllers of the Public Schools, Annual Report, 1862, pp. 193-194.

FIGURE 4.4

COURSE OF STUDIES, 1871



COURSE OF STUDY IN THE CENTRAL HIGH SCHOOL.

A	Logic; Composition; Elocution.	Astronomy.	Latin.	Mental Science.		Physics; Chemistry.	Anatomy; Physiology.	Mechanical and Engineering Drawing.
B	Logic; Composition; Elocution.	Uranography; Calculus.	Latin.	Mental Science.		Physics; Chemistry.	Anatomy; Physiology.	Mechanical and Engineering Drawing.
C	Rhetoric; Composition; Elocution.	Analytical Geometry.	Latin.	Political Economy.		Physics; Chemistry.	Anatomy; Physiology.	Shades and Shadows.
D	Composition; Elocution.	Trigonometry; Geometry.	Latin.	Political Economy.	German.	Physics; Chemistry.	Anatomy; Physiology.	Orthographic Projection.
E	Composition; Elocution.	Trigonometry; Geometry.	Latin.	Political Economy; History.	German.	Physics.	Book-keeping.	Linear Perspective.
F	Composition; Elocution.	Algebra; Geometry.	Latin.	Political Economy.	German.	Physics.	Book-keeping.	Linear Perspective.
G	Composition.	Algebra; Geometry.	Com. Calculations and Forms; Penmanship.	History.	German.	Nat. History; Physical Geog.	Book-keeping.	Drawing from Cards.
H	Composition.	Algebra.	Com. Calculations and Forms; Penmanship.	History.	German.	Nat. History; Physical Geog.	Book-keeping.	Drawing from Cards.

Source: Board of Public Education, Annual Report, 1871, p. 29.

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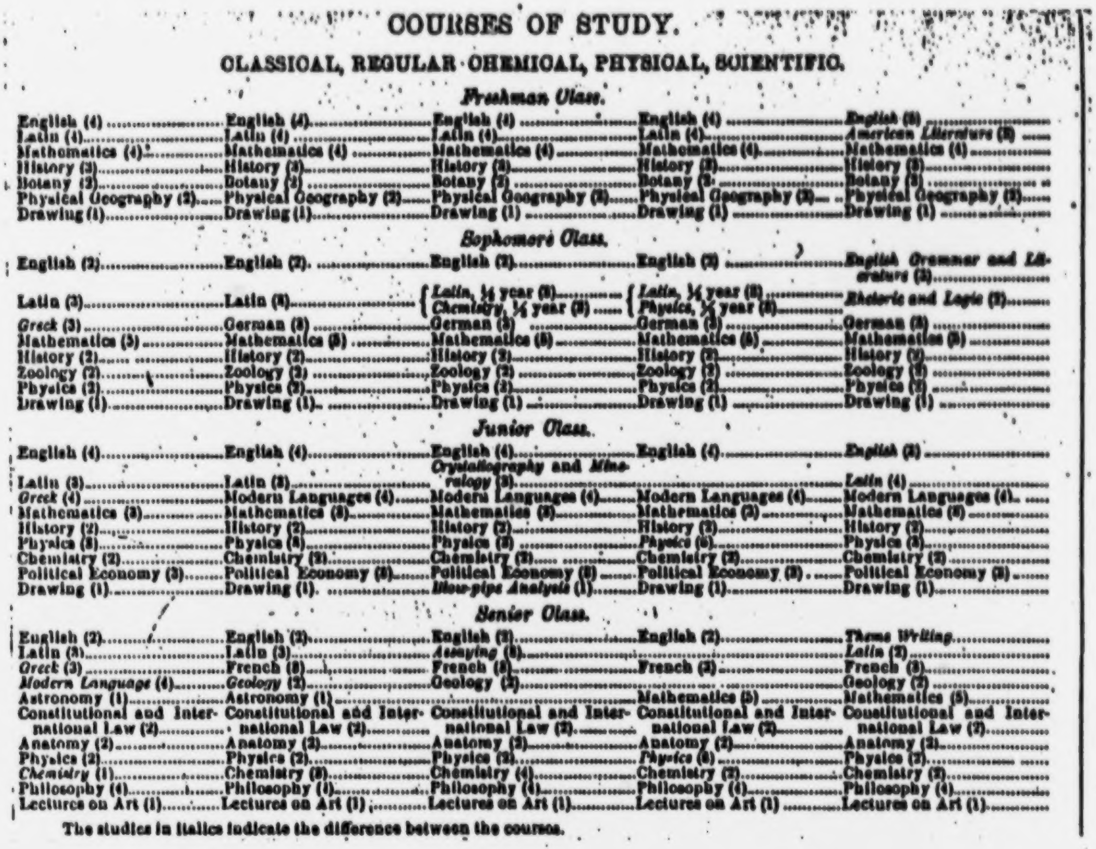
FIGURE 4.5

COURSE OF STUDIES, 1889



COURSES OF STUDY.

CLASSICAL, REGULAR CHEMICAL, PHYSICAL, SCIENTIFIC.

Freshman Class.

English (4)	English (4)	English (4)	English (4)	*English* (2)
Latin (4)	Latin (4)	Latin (4)	Latin (4)	*American Literature* (2)
Mathematics (4)	Mathematics (4)	Mathematics (4)	Mathematics (4)	Mathematics (4)
History (3)	History (3)	History (3)	History (3)	History (3)
Botany (2)	Botany (2)	Botany (2)	Botany (2)	Botany (2)
Physical Geography (2)	Physical Geography (2)	Physical Geography (2)	Physical Geography (2)	Physical Geography (2)
Drawing (1)	Drawing (1)	Drawing (1)	Drawing (1)	Drawing (1)

Sophomore Class.

English (2)	English (2)	English (2)	English (2)	*English Grammar and Literature* (2)
Latin (3)	Latin (3)	*Latin*, ½ year (3) *Chemistry*, ½ year (3)	*Latin*, ½ year (3) *Physics*, ½ year (3)	*Rhetoric and Logic* (3)
Greek (3)	German (3)	German (3)	German (3)	German (3)
Mathematics (3)	Mathematics (3)	Mathematics (3)	Mathematics (3)	Mathematics (3)
History (2)	History (2)	History (2)	History (2)	History (2)
Zoology (2)	Zoology (2)	Zoology (2)	Zoology (2)	Zoology (2)
Physics (2)	Physics (2)	Physics (2)	Physics (2)	Physics (2)
Drawing (1)	Drawing (1)	Drawing (1)	Drawing (1)	Drawing (1)

Junior Class.

English (4)	English (4)	English (4)	English (4)	*English* (2)
Latin (3)	Latin (3)	*Crystallography and Mineralogy* (3)		*Latin* (4)
Greek (4)	Modern Languages (4)	Modern Languages (4)	Modern Languages (4)	Modern Languages (4)
Mathematics (3)	Mathematics (3)	Mathematics (3)	Mathematics (3)	Mathematics (3)
History (2)	History (2)	History (2)	History (2)	History (2)
Physics (3)	Physics (3)	Physics (3)	*Physics* (6)	Physics (3)
Chemistry (2)	Chemistry (2)	Chemistry (2)	Chemistry (2)	Chemistry (2)
Political Economy (3)	Political Economy (3)	Political Economy (3)	Political Economy (3)	Political Economy (3)
Drawing (1)	Drawing (1)	*Blow-pipe Analysis* (1)	Drawing (1)	Drawing (1)

Senior Class.

English (2)	English (2)	English (2)	English (2)	*Theme Writing*
Latin (3)	Latin (3)	*Assaying* (3)		*Latin* (2)
Greek (3)	French (3)	French (3)	French (3)	French (3)
Modern Language (4)	*Geology* (2)	Geology (2)		Geology (2)
Astronomy (1)	Astronomy (1)		Mathematics (5)	Mathematics (5)
Constitutional and International Law (2)	Constitutional and International Law (2)	Constitutional and International Law (2)	Constitutional and International Law (2)	Constitutional and International Law (2)
Anatomy (2)	Anatomy (2)	Anatomy (2)	Anatomy (2)	Anatomy (2)
Physics (2)	Physics (2)	Physics (2)	*Physics* (6)	Physics (2)
Chemistry (1)	Chemistry (3)	Chemistry (4)	Chemistry (2)	Chemistry (2)
Philosophy (4)	Philosophy (4)	Philosophy (4)	Philosophy (4)	Philosophy (4)
Lectures on Art (1)	Lectures on Art (1)	Lectures on Art (1)	Lectures on Art (1)	Lectures on Art (1)

The studies in italics indicate the difference between the courses.

Source: Board of Public Education, Annual Report, 1889, p. 53.

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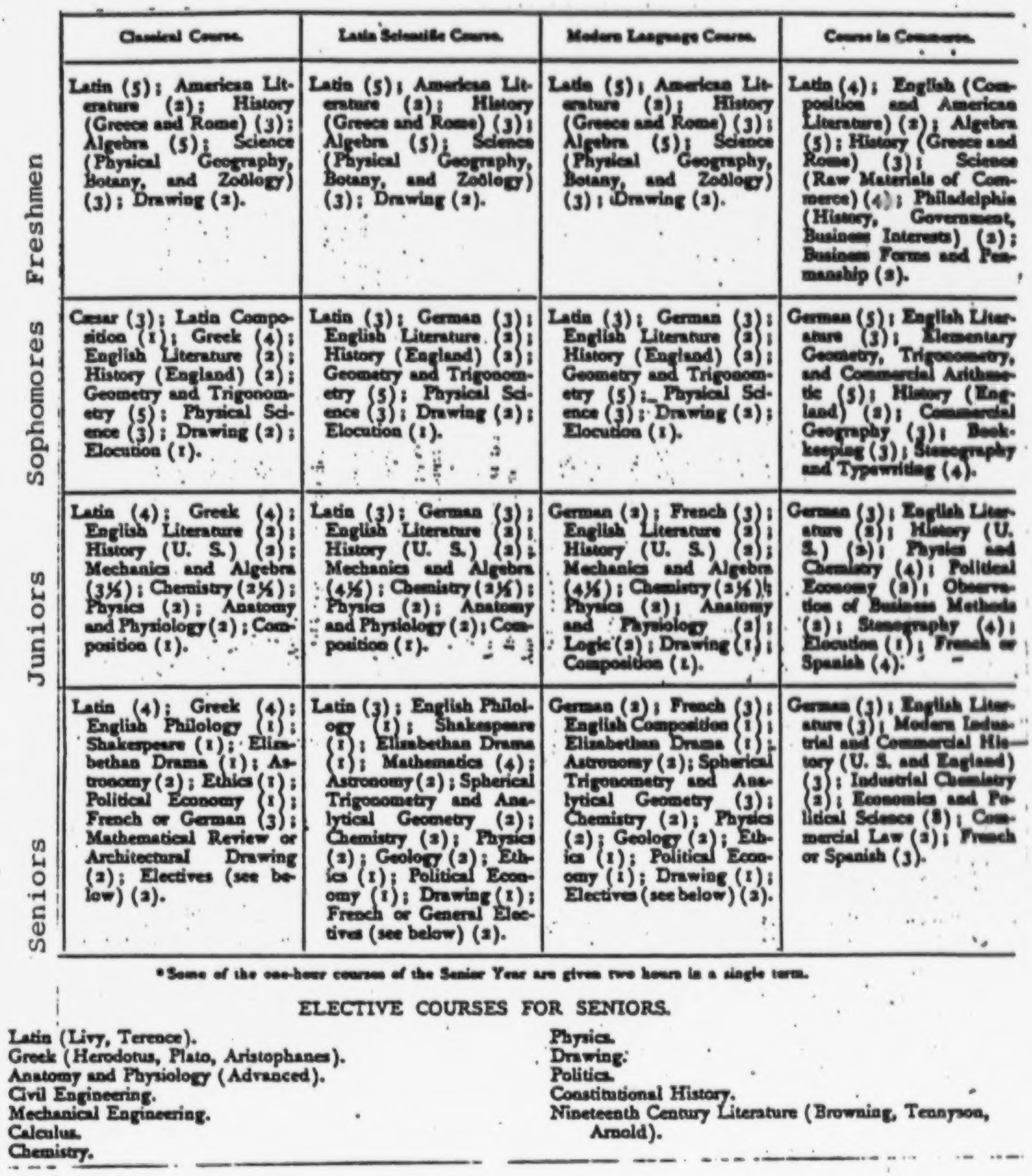
FIGURE 4.6

COURSE OF STUDIES, 1900



	Classical Course.	Latin Scientific Course.	Modern Language Course.	Course in Commerce.
Freshmen	Latin (5); American Literature (2); History (Greece and Rome) (3); Algebra (5); Science (Physical Geography, Botany, and Zoölogy) (3); Drawing (2).	Latin (5); American Literature (2); History (Greece and Rome) (3); Algebra (5); Science (Physical Geography, Botany, and Zoölogy) (3); Drawing (2).	Latin (5); American Literature (2); History (Greece and Rome) (3); Algebra (5); Science (Physical Geography, Botany, and Zoölogy) (3); Drawing (2).	Latin (4); English (Composition and American Literature) (2); Algebra (5); History (Greece and Rome) (3); Science (Raw Materials of Commerce) (4); Philadelphia (History, Government, Business Interests) (2); Business Forms and Penmanship (2).
Sophomores	Cæsar (3); Latin Composition (1); Greek (4); English Literature (2); History (England) (2); Geometry and Trigonometry (5); Physical Science (3); Drawing (2); Elocution (1).	Latin (3); German (3); English Literature (2); History (England) (2); Geometry and Trigonometry (5); Physical Science (3); Drawing (2); Elocution (1).	Latin (3); German (3); English Literature (2); History (England) (2); Geometry and Trigonometry (5); Physical Science (3); Drawing (2); Elocution (1).	German (5); English Literature (3); Elementary Geometry, Trigonometry, and Commercial Arithmetic (5); History (England) (2); Commercial Geography (3); Bookkeeping (3); Stenography and Typewriting (4).
Juniors	Latin (4); Greek (4); English Literature (2); History (U. S.) (2); Mechanics and Algebra (3½); Chemistry (2½); Physics (2); Anatomy and Physiology (2); Composition (1).	Latin (3); German (3); English Literature (2); History (U. S.) (2); Mechanics and Algebra (4½); Chemistry (2½); Physics (2); Anatomy and Physiology (2); Composition (1).	German (2); French (3); English Literature (2); History (U. S.) (2); Mechanics and Algebra (4½); Chemistry (2½); Physics (2); Anatomy and Physiology (2); Logic (2); Drawing (1); Composition (1).	German (3); English Literature (2); History (U. S.) (2); Physics and Chemistry (4); Political Economy (2); Observation of Business Methods (2); Stenography (4); Elocution (1); French or Spanish (4).
Seniors	Latin (4); Greek (4); English Philology (1); Shakespeare (1); Elizabethan Drama (1); Astronomy (2); Ethics (1); Political Economy (1); French or German (3); Mathematical Review or Architectural Drawing (2); Electives (see below) (2).	Latin (3); English Philology (1); Shakespeare (1); Elizabethan Drama (1); Mathematics (4); Astronomy (2); Spherical Trigonometry and Analytical Geometry (2); Chemistry (2); Physics (2); Geology (2); Ethics (1); Political Economy (1); Drawing (1); French or General Electives (see below) (2).	German (2); French (3); English Composition (1); Elizabethan Drama (1); Astronomy (2); Spherical Trigonometry and Analytical Geometry (3); Chemistry (2); Physics (2); Geology (2); Ethics (1); Political Economy (1); Drawing (1); Electives (see below) (2).	German (3); English Literature (3); Modern Industrial and Commercial History (U. S. and England) (3); Industrial Chemistry (2); Economics and Political Science (8); Commercial Law (2); French or Spanish (3).

*Some of the one-hour courses of the Senior Year are given two hours in a single term.

ELECTIVE COURSES FOR SENIORS.

Latin (Livy, Terence).
Greek (Herodotus, Plato, Aristophanes).
Anatomy and Physiology (Advanced).
Civil Engineering.
Mechanical Engineering.
Calculus.
Chemistry.
Physics.
Drawing.
Politics.
Constitutional History.
Nineteenth Century Literature (Browning, Tennyson, Arnold).

Source: F.S. Edmonds, History of the Central High School of Philadelphia (Philadelphia: Lippincott, 1902), appendix.

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FOOTNOTES

AR = Annual Reports of the Philadelphia Board of Public Education (Controllers)

1. Merle M. Odgers, Alexander Dallas Bache: Scientist and Educator, 1806-1867 (Philadelphia: University of Pennsylvania Press, 1947), p. 15.

2. Bruce Sinclair, Philadelphia's Philosopher Mechanics (Baltimore: Johns Hopkins University Press, 1974), p. 150.

3. Ibid., pp. 211-2.

4. Ibid., p. 250.

5. These ideas were quickly abandoned at the school which Franklin created, the ancestor of today's University of Pennsylvania. The Papers of Benjamin Franklin, vol. 3, ed. Leonard Labaree (New Haven: Yale University Press), pp. 395-436.

6. Sinclair, Philosopher Mechanics, pp. 115-131; W.R. Johnson, "On the Combination of a Practical with a Liberal Course of Education," Journal of the Franklin Institute 2 (1828): pp. 55-7; Joseph Samuel Hepburn, "Notes on the Early Teaching of Chemistry in the University of Pennsylvania, the Central High School of Philadelphia and the Franklin Institute of Pennsylvania," Barnwell Bulletin 10:41 (October 1932).

7. Cheesman A. Herrick, History of Girard College (Philadelphia: Girard College, 1927), p. 378.

8. Alexander Dallas Bache, Report on Education in Europe (Philadelphia: Lydia R. Bailey, 1839).

9. Alexander Dallas Bache, Report to the Controllers of the Public Schools on Reorganization of the Central High School of Philadelphia (Philadelphia: Board of Controllers, 1839), p. 6.

10. Ibid., p. 16.

11. AR 1841, p. 25.

12. AR 1840, pp. 20-1.

13. Ibid., p. 24.

14. Michael B. Katz, The Irony of Early School Reform: Educational Innovation in Mid Nineteenth Century Massachusetts (Cambridge: Harvard University Press, 1968), part II.

15. Bache, Report on Education, pp. 381, 401, 403, 448, 463, 506 and 515.

16. I have chosen to represent the changing pattern of Central's curriculum administration by administration on the grounds that changes between presidencies tended to be greater than those within individual presidencies. As an additional simplification I will be characterizing the curriculum of each administration through a single course of study selected on the basis of representativeness and, of course, availability.

17. Bache, Reorganization, p. 31.

18. AR 1850, p. 118.

19. AR 1843, p. 65.

20. Bache, Reorganization, pp. 17-18; AR 1840, pp. 48-49.

21. AR 1853, p. 126.

22. Ibid., pp. 116-126; AR 1843, p. 80.

23. David J. Rothman, The Discovery of the Asylum: Social Order and Disorder in the New Republic (Boston: Little, Brown, 1971).

24. AR 1853, p. 125.

25. AR 1846, pp. 174-5.

26. The early presidents frequently pointed to the practical pursuits of Central alumni as proof that the school was succeeding in its mission. See, for example, AR 1841, p. 25; AR 1846, p. 96.

27. AR 1859, p. 131.

28. Ibid., pp. 129-31.

29. Ibid., p. 133.

30. Ibid., p. 134.

31. Ibid., pp. 132-3; emphasis in the original.

32. AR 1867, p. 207.

33. Ibid., p. 209.

34. AR 1869, p. 26.

35. Ar 1884, pp. 45-6.

36. John L. Haney, "The Philadelphia Period in the Life of Professor Elihu Thomson," Barnwell Bulletin 16:67 (February 1939); David F. Noble, America By Design: Science, Technology, and the Rise of Corporate Capitalism (New York: Knopf, 1977), pp. 7-10, 112-114.

37. Franklin Spencer Edmonds, ed., Proceedings of the Dedication of the New Buildings of the Central High School of Philadelphia, November 22-26, 1902 (Philadelphia: Lippincott, 1910).

38. Superintendent of Schools (Philadelphia), Annual Report, 1889, pp. 26-7.

39. William H. Cornog, School of the Republic, 1893-1943 (Philadelphia: Associated Alumni of Central High School, 1952), p. 42.

40. "Report of the Minority of the Faculty of the Central High School to the Committee on Central High School" (n.p., 1887).

41. AR 1889, p. 47.

42. Ibid.

43. Edward A. Krug, The Shaping of the American High School, 1880-1920 (Madison: University of Wisconsin, 1964), pp. 61-62.

44. Quoted in Cornog, School of the Republic, p. 169.

45. Quoted in Cornog, School of the Republic, pp. 169-70.

46. Odgers, Bache, pp. 101-2.

47. Richard Montgomery, "Robert Ellis Thompson, A Memoir," *Barnwell Bulletin* 15:58 (September 1937), pp. 25-6.

48. Percentages do not equal 100.0% because of rounding.

49. Cornog, *School of the Republic*, pp. 78-80.

50. Out of a total of 148 graduates of this class, information was found (in at least one of the books) about the college attendance of 122 men and about the later careers of 121 men.

51. Percentages do not equal 100.0% because of rounding.

52. *Handbook of the Central High School of Philadelphia* (Philadelphia: Mary Gaston Barnwell Foundation, 1922), p. 48.

53. Basil Bernstein, "On the Classification and Framing of Educational Knowledge," in *Class, Codes and Control: Theoretical Studies Toward a Sociology of Knowledge*, vol. 1 (New York: Schocken, 1974), pp. 202-230.

54. David J. Hogan, "The Growth of Public Education in Nineteenth Century Philadelphia: Aggregate enrollments, Attendance and Attainment," 1982, working paper for National Institute of Education Project on "The Organization of Family, Work and Schooling in Philadelphia, 1838-1920," table 6.

55. E. Digby Baltzell, *Puritan Boston and Quaker Philadelphia: Two Protestant Ethics and the Spirit of Class Authority* (New York: Free Press, 1979).

56. Colin B. Burke, *American Collegiate Populations: A Test of the Traditional View* (New York: New York University Press, 1982), p. 116.

57. M.F.D. Young, "An Approach to the Study of Curriculum as Socially Organized Knowledge," in *Knowledge and Control: New Directions in the Sociology of Education*, ed. M.F.D. Young (London: Collier-Macmillan, 1971), pp. 35-41.

58. See Mary P. Ryan, *Cradle of the Middle Class: The Family in Oneida County, New York, 1790-1865* (New York: Cambridge University Press, 1981), passim; and Michael B. Katz, Michael J. Doucet and Mark J. Stern, *The Social Organization of Early Industrial Capitalism* (Cambridge:

Harvard University Press, 1982), chapter 7.

59. Burton Bledstein, The Culture of Professionalism: The Middle Class and the Development of Higher Education in America (New York: Norton, 1976), chapter 6.

60. Randall Collins, The Credential Society: An Historical Sociology of Education and Stratification (New York: Academic, 1979), pp. 119-121.

61. The following account draws heavily on Laurence R. Veysey, The Emergence of the American University (Chicago: University of Chicago Press, 1965).

CONCLUSION

In the introduction to this dissertation I raised four sets of theoretical issues which I intended to explore in the course of analyzing the history and sociology of Central High School. These issues included: specifying the organizational character of American school systems; identifying the relative importance of the various products of schooling; evaluating the applicability of alternative theories about the sources of societal influence on public schools; and examining the sociological implications of different curriculum types. The last of these was discussed in some detail in the conclusion to chapter four, but evidence relevant to the other three issues is scattered throughout the text. This concluding chapter will be devoted to drawing together and generalizing about findings from each of these remaining theoretical areas.

1. THE ORGANIZATION OF SCHOOL SYSTEMS

I have characterized the Philadelphia school system as having been transformed from a market structure of control in the mid nineteenth century to a bureaucratic structure by the early twentieth century. The early market structure was an informal system of organization based upon the distinct attractiveness and scarcity of Central High School as a commodity in the educational marketplace. Grammar school students were engaged in an open competition over admission to Central, which required passing the latter's entrance exam; at the same time, grammar school masters competed over which of them could achieve high school admission for the largest number of his students, an honor which also offered the possibility of a seat on the high school faculty. The result is that the high school exerted a considerable amount of emulative control over the lower schools, and the school system's board of controllers, by dictating the content of the entrance exam, could exercise a degree of informal influence over the system even through it lacked formal authority.

Between 1867 and 1911 the school system went through a gradual process of transformation from a high-school-dominated market structure to a superintendent-dominated bureaucratic structure. In a limited fashion the high school contributed to this transformation: it helped centralize power in the hands of the school board; it established the district's first bureaucratic procedures in an effort to offset criticism about the fairness of the entrance exam; and it played a leading role in setting and examining the qualifications of prospective teachers in the school system. However I have not sought to explain the reasons for this organizational change. The object of my attention has been the high school rather than the school system, and in general the high school was less the instigator of bureaucratization than an object slated for subordination to it. In fact, an explanation for the development of bureaucracy in the system would require a perspective extending beyond the high school and even the school system to the realm of state politics, since the most significant stimuli to bureaucratic development in the district were acts passed by the state legislature (in 1867, 1905 and 1911).

As a result of these considerations, I will not attempt to explain why bureaucratization took place in the Philadelphia school system but will instead provide two interpretations of what this change meant. One interpretation of the change is that it represented a movement toward structuring what had been a wide-open process of contest mobility. A second is that the change can be seen as a shift from a hierarchy of schools to a hierarchy of administration.

Structuring the Contest

Ralph H. Turner has sought to characterize the differences between the American and English systems of education in the mid twentieth century in terms of the differences in their respective patterns of social mobility. He sees Americans engaged in a system of contest mobility with open competition over elite status, while the English are involved in a system of sponsored mobility with a closed selection process under elite sponsorship. According to Turner, a number of characteristics of American schools grow out of their roots in contest mobility: such schools tend to emphasize equal opportunity, motivation and merit; they tend toward practicality, even vocationalism, in the content of courses; they offer credentials which are highly visible and easily interpreted by the general public. Sponsored mobility promotes contrasting traits in English schools: they stress selection, status acceptance and ascribed characteristics; they promote a specialized, intellectual and esthetic form of curriculum; and their credentials are primarily designed to identify the elite to each other.(1)

In the mid nineteenth century the meritocracy, practicality and credential visibility of both Central

High School and the school system which it dominated conformed closely to Turner's description of the form of schooling under contest mobility. In fact I wish to argue that the market structure of schooling in Philadelphia was a purer form of a system of "contest schooling" than the contemporary American model and that the shift from a market to a bureaucratic structure in the city represented a move away from pure contest in the direction of "sponsored schooling."

Consider the changes that took place in the Philadelphia school system in contest terms. The merit standard of access to the high school, for both students and teachers, became gradually circumscribed in the process of bureaucratization. The competition among students for admission to the high school was first decided on the basis of performance on an entrance exam, then the purity of this performance standard was damaged by the imposition of a quota system (in the 1870s), and finally in 1900 performance testing was abandoned in favor of admission on the basis of grammar school certificate. Likewise Central professors were originally chosen through open competition based on teaching performance (also frequently on tested ability), but in the late 1880s the criterion shifted to the simple possession of a college degree. At the same time Central's practical curriculum gave way to a more specialized and intellectualized academic course, representing a shift away from the pure form of contest curriculum in the direction of the sponsored form of course. Likewise the character of the high school's credentials changed. The practical course gave Central's credentials a clear use-value and thus provided them with an unambiguous and understandable public meaning. The new academic credentials were rights to further credentials rather than evidence of useful skill, and thus they were intended for an academic audience rather than the general public -- another move in the direction of sponsorship.

I am not arguing that the Philadelphia school system shifted from a contest to a sponsored structure during the nineteenth century. Instead I am saying that the city's schools changed from a pure form of the contest structure into a more complex system which contained elements which Turner says characterized schooling under a sponsored mobility structure. The complex structure that emerged in Philadelphia at the turn of the century is very much like the contemporary model of American schooling which Turner used as the basis for constructing the contest type of schooling. Oddly, therefore, what I have found in the Philadelphia case is that Turner's generalizations about the character of schools under contest mobility were more appropriate in the nineteenth century than they are now. This anomaly is however easily explained in Turner's own terms. For his typification of school systems was not based on actual conditions in American and English society but on abstract characterizations of contest and sponsored mobility structure -- which he in turn asserts are represented in these societies. My argument is that America in the mid nineteenth century had a social structure conforming much more closely to the contest mobility pattern than it did 50 or 100 years later. Thus what I have called the market structure of the early school system in Philadelphia can be seen in part as a reflection of the relatively fluid opportunity structure that existed in the city at the time. But as chances for proprietorship declined and as employment came increasingly under the regulation of large organizations during the second half of the nineteenth century, the competitive structure of schooling was gradually transformed into a bureaucratic structure. In both mobility and schooling, Philadelphia was shifting from competition to channeling, from openness to closure, and from emulation to regulation.

The primary mechanism by which channeling and closure and regulation were accomplished in the newly bureaucratic school system was academic credentials. For both students and professors, the basis of admission to the high school was changed from a competitive performance standard to the possession of the appropriate credentials. This shift from competitive measures to credentialism provides an important insight into the meaning of the organizational transformation of Philadelphia's schools. Note that under the market structure of schooling an applicant's merit was verified by the performance of the individual while under the bureaucratic structure merit was verified by the certificate of a school. In the new system therefore the prospective student or professor was given a strong incentive to channel his energies into the achievement of the appropriate credentials rather than directly competing for the position. Thus what had once been obtained by individualistic meritocratic competition was now obtained by organizational sponsorship. What had been a relationship between individuals was now a relationship between schools.

For individuals, these credentials were a ticket of admission to schools and jobs, but for the schools they were tokens of mutual respect. It should be recalled that under the market structure of schooling, Central dominated the lower schools and that the means of its domination was the entrance exam. Examining the graduates of the city's grammar schools was a way of announcing that such schools were of uncertain quality and thus that the high school was forced to verify for itself whether these graduates were up to Central's standard. However when the high school began to admit students on the basis of a grammar school certificates, the old hierarchical relationship was gone. The high school was no longer dictating standards: if a grammar school principal certified a student as worthy of admission to the high school, the high school had no choice but to admit him. When the relations between Central and the grammar schools came to be defined by certification rather than testing, these schools had achieve a parity of power. The high school did not regain its edge until 1939, when it was once again awarded the power to impose admissions standards beyond grammar school certification.

From a Hierarchy of Schools to a Hierarchy of Administration

What I have argued here on the basis of credentials has been amply demonstrated in chapter one on broader organizational grounds: that the early hierarchy of schools capped by Central High School was leveled in the process of bureaucratization. The evidence for this change comes from many sources: the high school's loss of power over lower schools, its loss of autonomy (to the superintendent's office) and the loss of its faculty's high status (as reflected in high pay differentials). This finding presents a paradox in which an inherently hierarchical structure is seen as leading to the destruction of hierarchy. The solution to the paradox lies in distinguishing between the structure of control and the structure of the population being controlled. As Weber noted, "Bureaucratic organization has usually come into power on the basis of a leveling of economic and social differences."(2) I see this working on two levels in the Philadelphia cases. First, the superintendent's bureaucracy could not gain command of the school system until a rival hierarchy of reward and control -- the market structure dominated by Central -- was out of contention. Second, when the special privileges which once separated schools and teachers were eliminated, the prospect of bureaucratic control -- based on merit rather than privilege -- appeared attractive.

Tocqueville asserts that bureaucracy or any other centralizing power in fact actively fosters the leveling process in order to gain domination: "Every central power, which follows its natural tendencies, courts and encourages the principle of equality; for equality singularly facilitates, extends and secures the influence of a central power."(3) One can see this principle in action in relation to Philadelphia teachers' salaries. There were extraordinary differences in pay between men and women and between schools of varying status. The incipient bureaucrats on the school board set in motion the process of equalizing these differences as early as

1879, and in so doing they launched a powerful weapon for attacking the special privilege inherent in the market structure and proclaiming their own dedication to equity. Since Central High School was the primary beneficiary of the old structure of unequal power, pay and prestige, it was also the natural target for the democratic rhetoric of the bureaucratizer; and its gradual fall charted the slow ascendance of bureaucratic control.

In the introduction I used the work of Bidwell, Lortie and Perrow to argue that modern American school bureaucracies exercise the greatest degree of control over administrative matters such as hiring, payroll, record, materials and building -- which bureaucracies are by nature capable of handling effectively. However I also argued that these same structures were only partially successful in controlling instruction, since it takes place out of sight (behind the doors of the self-contained classroom) and since neither the capabilities of the students not the techniques of the teacher are prone to routinization. Also, since instruction is located in schools and administration in the superintendent's office, schools also enjoy a degree of autonomy from bureaucratic domination.

In the present study I found two pieces of evidence which support the conclusion that this peculiarly administrative form of bureaucracy is in fact what developed in the Philadelphia school system and that the split between administration and instruction was not a recent phenomenon but a product of the original process of bureaucratization. The first evidence arises from the changing functions of the grammar school principal. Under the market structure of schooling in Philadelphia, the principals of the city's grammar schools were in fact principal teachers. They taught the most advanced classes and supervised the other teachers, known as assistants, and thus their role combined both instructional administrative duties. It was this very union of functions which provided the high school with its leverage over these grammar schools. The male grammar school heads had a strong incentive to tailor their curricula to the demands of Central's entrance exam, since they were evaluated both as administrators and as potential high school professors on the basis of their students' performance on this test. In addition, these men had in their own hands the ability to make these changes, since they were the master teachers of their schools. During this period therefore the school system's market structure exerted a unique influence on the instructional process by motivating the principal teachers to comply with its instructional requirements.

However, early in the process of bureaucratization, the school board began promoting the separation of administrative and instructional duties. In 1878 the board granted permission to local boards to relieve school heads of their teaching duties so they could become "supervising principals"; and five years later, during the first year of the system's first superintendency, a $200 pay advantage was offered to these full-time administrators. By 1913 supervising principals had become the norm, with teaching principals remaining only in a few small elementary schools. The separation between administration and instruction thus was initiated at the start of the system's move toward bureaucracy, and it widened as this bureaucracy reached maturity.

The other evidence about the administrative character of Philadelphia's early bureaucracy is the persistent relative autonomy of Central High School in the twentieth century. My argument is that the superintendent's office won a decisive victory by subordinating the high school to its administrative control but that it never achieved the same degree of control over the inner workings of the school. Central was forced to give up its powers over other schools, its special privileges, its high pay. It was even compelled to incorporate commercial, manual training and industrial courses into its once purely academic curriculum. Yet these curriculum changes proved a good example of how the ability of the school bureaucracy to effect change in the high school wavered when it turned from administration to instruction. Central dealt with these curricular intrusions either through co-optation or isolation. The commercial and manual training courses were gradually transformed from terminal and quasi-vocational programs into college-preparatory courses in business and engineering, respectively; and the irrevocably vocational industrial course was simply kept in quarantine in the old Philadelphia Trades School building blocks away from the high school. Eventually of course Central succeeded in carving away all of the non-academic courses and in restoring selective admissions at the same time. The high school lost a great deal of autonomy to the rising administrative bureaucracy, but its losses were neither total nor permanent.

While bureaucratization brought an expansion of administrative control, it could be argued that it actually brought a decline in control over instruction. The market structure of schooling had a remarkably effective system for motivating teachers to comply with instructional guidelines. The bureaucratic structure of schooling lacks both the emulative incentives and the combined administrative-instructional functions of the principal teacher that made this system of motivated compliance work. One conclusion that can be drawn from this is that bureaucracy won out in the Philadelphia schools not because it could ensure better teaching but because it could better manage everything but teaching. It could control all of the schools in the system in relation to any activities that were routinizable -- that is, any organizational functions which schools share with non-educational institutions. Yet it was less effective in controlling precisely that part of schooling which is unique and which gives it its purpose, classroom instruction. One interpretation of this is that bureaucracy succeeded within school systems because its promoters were convinced that it was more important to control schools as organizations than to manage schools as mediums of instruction.(4)

2. THE PRODUCTS OF SCHOOLING

Schooling at the secondary level can be seen as producing three types of outcomes: it teaches students a variety of useful cognitive skills; it socializes them into a particular set of values and norms; and it gives graduates educational credentials. Few would deny the existence of these educational products, but -- as I reviewed in the introduction -- there is a considerable amount of disagreement among social scientists over their relative significance. Human capital theorists stress skill training, structural-functionalists and Marxists both stress socialization, while exponents of a status-group competition approach emphasize the conferring of credentials. In this section I will examine the extent to which Central High School delivered each of these outcomes to its students and how the relative importance of the outcomes changed over time.

Skill Training

On one level the various curricula at Central High School are easy to categorize on the basis of the skills they provided. The early practical course was deliberately directed toward preparing students for business life by training them in a number of potentially useful commercial skills. After 1889 the academic course shifted sharply away from skill training as a result of the change in its orientation from business entry to college entry. At the same time the new commercial course (and the later mechanical and industrial courses) actually increased the amount of practical skill transmission to the point of vocationalism. In these terms the academic course would rank low in skill training, the practical course would rank higher and the commercial and other courses higher still.

However, on another level the task of distinguishing between courses on the basis of skill training becomes more complex. This is particularly the case with the critical distinction between practical and academic courses. In terms of the rhetoric of the supporters of each program, the differences between the two were sharply defined: the practical course was devoted to business skills and the academic course to university disciplines. Yet as was shown in chapter four, in practice the subject-by-subject differences between the two reflected a change of emphasis rather than a flat reversal. In content as well as in purpose, the practical course provided more skill training than the academic course which followed it, but even so only about 10% of class time in the practical era was devoted to skills that were specific to particular occupations. The remainder of the time was spent on what appear to the modern eye to be liberal arts subjects -- the kind of subjects one would expect to find in the academic track of a contemporary high school. For the most part, therefore, the practical course was not providing training in narrow business skills but in a much broader set of cognitive skills -- such as analysis, experimentation, logic, composition and speech -- which were of general use to middle class adults.

Thus the practical course offered a rather abstract and academic form of skill training. In these terms the academic course offered a form of skill training that was even more abstract and more academic. In practice the change away from skill training in the distribution of subject hours was rather small, representing a shift from vocational subjects into classics and science. The primary difference was in purpose rather than content, for practical-course skills were intended for immediate use in the world of work while academic-course skills were intended for use in a higher level of education. This represents a subtle but significant change in the meaning of skill, which can best be understood in relation to the concept, merit. It should be recalled that throughout Central's history, a student's chances of graduation were determined for the most part by merit, where merit was defined (in both the practical and academic courses) as academic performance. The practical intent and terminal character of the practical course meant that a student's merit in the course signified the possession of usable worldly as well as academic skills. However the academic intent and college-preparatory character of the academic course meant that a student's merit signified the possession of strictly academic skills. The result was that skill was no longer simply measured by academic performance, it was constituted by it. Put another way, in the academic course doing well in school was no longer emblematic of skill in other areas but had become the primary form of skill which the school transmitted.

Value Socialization

The transition from the practical to academic course at Central was marked by a shift in skill training in a more abstract and academic direction. Value socialization at the school underwent the same kind of change as skill training did, but this change occurred long before the arrival of the academic curriculum. For the first 20 years of the practical course, the school sought to socialize students into bourgeois values governing both character and performance. Character socialization was embodied in an elaborate system of discipline which was designed to foster such essential bourgeois traits as self-discipline and future-orientation. Performance socialization was embodied in the rigorously competitive system of academic evaluation which was designed to encourage a faith in the certainty of rewards for the meritorious. The two forms of value training were inextricably linked within the students' grades, which were a combination of both conduct and achievement measures.

At about the mid-point of the practical course, President Nicholas Maguire redirected the school's socialization effort toward achievement alone. This marked a major change in the orientation of the school. Maguire's predecessor, John Hart, saw character building as an essential part of the high school's purpose and thus he placed it on a par with academic work. Maguire, on the other hand, saw the discipline of the school as a support system for academic studies -- a means of preserving order within the school so that studies might progress undisturbed. Thus he stopped the practice of deducting misconduct demerits from grades on the grounds that it was unfair to the best students, who were not always the more "decorous." From this point on, grades at Central High School reflected only a student's academic performance.

Consider the implications of this change for the meaning of merit. Throughout that portion of the history of the high school that comes under the scrutiny of this study, the school operationalized the concept merit in a single variable, grades. With equal consistency over the same period this one variable provided by far the strongest explanation of a student's chances for graduation: those who graduated always had among the highest grades. This was as true in the early years, when grades included both conduct and performance measures, as it was in later years, when grades measured only performance. Thus the working definition of merit changed radically during this period but the effect of merit on student longevity remained constant. The school imbued students with a faith in merit by continuing steadfastly to hold them to a rigorous merit standard for advancement -- even as the standard itself was transformed. Students never stopped receiving the message that the meritorious will triumph, but they did come to see merit in a new light, as academic skill.

By the time the academic course was initiated at the high school, the content of skill training at the school was already heavily academic and the meritocratic values instilled by the school were already redefined in academic terms. The purpose of the high school was still practical but its practice was largely academic. Thus the arrival of a college-preparatory curriculum had the effect of bringing the school's official goals in line with the academic character of its skill training and socializing. In Bernstein's terms all of these changes can be interpreted as signs of the strengthening of Central's pedagogical frame. The terminal nature of the practical course, its ideological orientation toward business and its tendency to mix morality with scholastic achievement are all indications of weak framing: the barrier was low between the aim and content of learning at the school and the interests, attitudes, morals and skills in the community. However students in the academic curriculum were immured in a distinctively scholastic learning process. The skills and values taught -- now purified of exogenous influences such as moralism and vocationalism -- were wholly academic, and students were being oriented toward further schooling rather than entry into community affairs. The partially permeable process of learning of the early school had become school-bounded by the 1890s, and the benefits of a high school education had been restructured in such a way that they could only be fully realized by the pursuit of additional schooling.

Credentials

Skills and values are products of schooling that students acquire directly from instruction at the school. However credentials are a different kind of product. Skills and values are taught to students, but credentials are conferred on them; and while teaching can be thought of as producing incremental benefits to the student over the whole length of his tenure at a school, credentials are awarded only at the completion of the course -- with the result that a student either has them or he does not. A student who drops out prior to graduation has acquired a degree of skill training and socialization but not a diploma. Thus the extent that credentials are valued by the student, they provide a stronger incentive for the student to stay the course than do the other products of schooling.

The students at Central High School responded to this incentive. Throughout the school's first 80 years, students tended either to drop out in the first two years of schooling or to remain for all four; very few left during the last two years. This pattern supplies evidence for the attractiveness of Central's credentials independent of the other benefits offered by the high school. The sources of this attractiveness were identified in chapter four. During the practical era, Central's degree offered most of the advantages and few of the disadvantages of a college diploma, while under the academic regime its credentials were valued as a ticket of entry into college.

I wish to argue that Central's credentials, and not its skill training and socialization, were the most potent attraction which the school offered to the public. Of the three products of schooling, only credentials provide a satisfactory explanation of the dramatic organizational and curricular transformation of the school which took place in the late 1880s. When the commodity value of Central's college credentials began to fall, the high school was restructured in order to allow it to offer the more highly valued college-preparatory credentials. The change in skills training from partially practical to purely academic, which took place at the same time, was required in order to support the preparatory claims of the new credentials. Meanwhile the change in the school's meritocratic values occurred 30 years too early to be considered a factor in the transformation.

Central's credentials were closely connected with the other prime cause of the high school's transformation -- the growth of bureaucratic control in the school system. The rising threat posed by the latter spurred the school's supporters into an effort to elevate it. But bureaucratization also promoted a structure of horizontal relations between schools, relations that were increasingly defined by means of formal credentials. Whereas the old individualistic and community-oriented Central credentials were compatible with the market structure of schooling, the new school-sponsored and school-oriented high school credentials were in tune with the bureaucratic structure of schooling.

The true parallel to Central's credentials from the early years is not the later academic high school degree but the credentials of graduate schools at the turn of the century. Both were brand new, both exerted a potent emulative force in the educational market and both helped restructure the organization of schooling. The drawing power of the early high school's credentials produced a hierarchy of schools within the Philadelphia school system by inducing lower schools to re-orient around the goal of achieving high school admission for their students. The drawing power of the late nineteenth century graduate school's credentials helped produce an extended hierarchy of schools encompassing all levels of education by inducing lower schools to re-orient around the goal of university admissions. However these two similar causes led to educational structures that were different from each other in important ways.

The early school system under the high school's influence was characterized by an openly competitive and individualistic market structure. Individual students and teachers vied for openings at the high school under conditions where success was determined by the high school alone via its entrance exam. The organization of schooling which emerged at the end of the century under the university's influence was characterized by a closed, formal, school-based and school-sponsored structure. While the base unit of the market structure of schooling was the individual, the base unit of the new structure was the school. The market structure was a side effect of the individual pursuit of high school credentials, but the new structure was a closed route through which individual ambitions were channeled.

The key organizing mechanism of the new system was an elaborated pattern of educational credentials. Emerging under the influence of the university, this structure consisted of a four-stage educational progression -- from elementary school to high school to college to graduate school. The transition between the levels of schooling in each case was mediated by credentials, as acceptance into each of the higher levels was based on the credentials of the previous level. The consequence of this system for the student was a refocusing of his ambition from ultimate credentials to proximate credentials. Those who sought the upper levels of the structure were no longer able to bypass the lower schools by taking an entrance exam; instead they were compelled to aim at fulfilling the degree requirements of each of the lower level schools in turn. The power to certify gave each school the ability to command the full attention of their more ambitious students, while it gave the structure as a whole the ability to channel these ambitions into a single educational track. This series of proximate credentials also meant that even the large majority of students who left school before achieving the higher levels of the structure were able to earn a certificate as a reward for their labors. Of course the credentials offered by the lower levels of schooling carried a lesser market value, but nonetheless they gave an incentive for a student to complete the course at his grammar school or high school even if he was not going to move to the next level in the progression.

Credentials mediated between schools at different organizational levels. Instead of the simple power relations of the market structure, the credential structure of schooling was characterized by relations that were more formal and regulated. The universities exerted market power because of the attractiveness of their ultimate credentials, but the system that developed was less imperious than one might have suspected given its origin. University dominance was assured by its exclusive attractions, however this dominance was tempered by the growing reliance of higher level schools on the certificates of lower level schools in determining the suitability of candidates for admission. Each school's credentials were a certificate of student competence, and thus when schools admitted students on this basis they were in effect acknowledging the competence of the schools that conferred the credentials. As I argued earlier, within city school systems actual organizational equality was achieved between high schools and elementary schools; for when university competition and bureaucratic leveling lowered the status of Central High School, the imposition of credential relations with grammar schools provided the last push toward parity.

However the relations between high schools and universities were not governed by a common bureaucracy like a city school system, and in addition there was no higher level of education to compete with the universities. As a result the university was not subjected to the same leveling pressure that the high school had been and the relationship between it and the high school remained hierarchical. One sign of the continued power of higher education is the retention of a form of admissions testing -- now lost to most public high schools -- through the agency of the College Entrance Examination Board. But the requirement that candidates for college must submit high school credentials in addition to college board scores indicates that the power of university over high school is still less tyrannical and more structured than the power Central High School once held over grammar schools.

3. SOCIETAL INFLUENCES ON PUBLIC SCHOOLING

In the introduction I identified four types of theories that seek to explain the ways in which schools are influenced by society. These theories are distinguished from each other by the particular social process which each chooses to emphasize -- modernization, social control, status-group competition and cultural domination. It is my intent in this section to review briefly the history of Central High School in light of these theories in order to determine how well the Central experience conforms to the pattern predicted by each theory.

Modernization

Modernization theory is grounded in two processes, structural differentiation and expanding achievement orientation.(5) According to the theory, as a society modernizes it begins to develop specialized institutions for handling social functions which were formerly encompassed by the family; and as modernization progresses the process of differentiation extends throughout the social structure. At the same time achievement values grow to dominance in the modernizing culture as they replace older family-based ascription values. The theory provides four insights into the nature of schooling. First, one of the specialized institutions to emerge from the process of structural differentiation is education. Second, as differentiation develops, technology advances and the number of occupations requiring higher cognitive skill increases; thus it becomes the function of schooling to provide these skills. Third, it also becomes the function of schooling to socialize students in the values of achievement, since they are better suited to this task than ascriptively-structured families. Fourth, as modernization continues, all of these characteristics of schooling intensify: schooling becomes more separate as an institution, skill training and achievement socialization become more important and the schools themselves become differentiated.

Many of the facts of the Central High School case fit the modernization scenario. The high school was established as part of Philadelphia's first comprehensive and differentiated (graded) system of public education. Its practical curriculum offered training in skills relevant to the expanding business sector along with an inculcation of meritocratic values. The gradual strengthening of the high school's frame was manifestation of the growing separation of schooling from the community. And the development of a specialized administrative apparatus within the school system, the emergence of a variety of types of secondary schools at the turn of the century and the installation of a differentiated curriculum at Central all pointed to a more general process of differentiation within the new institution of public education.

In spite of these elements of congruence, there are two reasons for concluding that modernization theory does not provide an adequate explanation for the course of Central's history. First, there are too many important events in that history which run counter to the expectations engendered by the theory. Even during the practical era, skill training at the high school was largely academic and thus was applicable to the demands of the differentiating occupational market only on a very abstract level. And, contrary to what modernization theory would predict, the school's main course became even more academic and less vocational after 1889. In addition, after an initial period of experimentation with a variety of specialized secondary schools, the superintendent and school board turned their backs on this policy of differentiation in favor of a system of homogeneous high schools. Even the most distinctive of these -- Central -- was recast in the mold of the comprehensive high school. And more generally, the differentiation of administration from instruction within the school system actually had the effect of reducing many of the differences between schools at all levels.

Second, while much of Central's history does match the expectations of modernization theory, this correspondence does not necessarily constitute an explanation. The reason for this is that, like the pluralist theory of politics, the modernization theory of education is better at describing events than at explaining them. For example, it is clear that the high school arose as part of a process of differentiation, or grading, in the new institution of public education, but this is an observed correlation rather than an explanation of why the high school was created. Modernization theory fails to specify the particular causal mechanisms which link the underlying long-term differentiation of social structure with the immediate historically-specific conditions under which Central emerged. As I will discuss later in the section on class culture, the special character of the high school, the timing of its creation and the organizational role it played are more parsimoniously explained as consequences of bourgeois ideology. Likewise the subsequent curricular and organizational transformation of the high school at the end of the nineteenth century was associated with a general advance of societal differentiation, but this association cannot explain either the suddenness or the form of this change. Instead, as I will discuss in the section on interest-group competition, this transformation is best understood as the result of the high school's effort to restore the marketability of its educational credentials.

Social Control

According to social control theory, public schooling was created and later restructured as a mechanism for the middle and upper classes to establish and enhance social control over the working classes. Schools accomplished this end by transmitting working-class job skills and submissive values to working class students while transmitting middle-class job skills and autonomous values to middle class students. The history of Central High School provides little or no support for this argument. The skills and values promulgated by the high school (with the isolated exception of the industrial course) were consistently middle class in character and so was the student body. The minority of working class boys who attended the school were not placed in a subordinate track but were exposed to the same instruction and given the same chance of graduation as the middle-class students. This absence of class bias was most obvious in the era of the uniform curriculum; but even after the curriculum was differentiated, the middle class proportion of the academic, commercial and mechanical students remained about two-thirds. Thus the working class boys attending the high school were not being subordinated to the middle classes but on the contrary were being elevated to a middle class level -- in terms of both values and occupational training. From the very start it is clear that the high school was intended by its founders to be an object of emulation for students from all classes rather than an instrument of class repression. It embodied the middle class ideal of education, toward which all students were encouraged to strive and within which all competed on an equal basis.

Status-Group Competition

The theorists of status-group competition approach schooling as a by-product of the struggle among groups within a society to achieve or retain a relative advantage in social status. While the modernization and social control theories see the instructional outcomes of schooling -- skill training and value socialization -- as constituting the primary social functions of schooling, the status-group model finds the main function of schooling in the production of educational credentials. These credentials are seen as a form of commodity whose acquisition enhances the social position of the owner. Of all four theories, this one provides the strongest explanation of the transformation of Central High School which took place in the late 1880s. As I argued at some length in the conclusion to chapter four, the key situation which led to this transformation was the sharp decline in the commodity value of Central's credentials in the face of competition from the newly emerging university. The proprietary middle class, which consistently provided half of Central's students, had previously pursued the high school's diploma for its sons as an attractive alternative to a college degree. Central's credentials offered this class a means of status maintenance when it was faced with a declining ability to transmit position by means of property inheritance. As the ratio of employed to self-employed persons in the occupational structure increased during the nineteenth century, the proprietary middle class in Philadelphia used Central's credentials as a bulwark against the threat of proletarianization. These credentials provided the proprietors' sons with both a valuable commodity (a prestigious form of currency for exchange on the status market) and a valuable skill (a certified capability for meeting the demands of middle class employment).

The glamor of Central's diploma as a status prop and entree to salaried occupations was eclipsed by the rapidly rising market value of university credentials. Having failed in the attempt to compete with the university, the high school was reorganized in a college-preparatory mode, so that its credentials offered a means of access to university credentials. This change amounted to a formal devaluation of Central's credentials (from collegiate to college-preparatory) in the wake of their decline in value on the open market. In return the high school received a less exalted but more stable position in a closed hierarchy of credentialing institutions, one in which Central no longer provided the ultimate credentials but in which it guarded the gate leading to them. This change in the character of Central's credentials helped solidify the support of the school's traditional proprietary middle class clientele. After the change took place, the proprietors continued to provide half of the high school's students even though their proportion of the city's class structure dropped off sharply.

If status-group competition provides the strongest explanation for the transformation of the high school late in the nineteenth century, it does not explain the origins of the high school with equal success. One could argue that the key to Central's immediate appeal to the city's middle classes was its status-conferring possibilities. The school's location, its marble facade, its astronomical observatory, its elevated curriculum and its unique position within the school system -- all of these contributed to the prestige of the school, and this prestige was potentially transferable to its students. Yet this conclusion must be qualified in several ways.

First, the school did not win formal power to grant college credentials until 11 years after its opening, and thus the credentialing capability of the early school is in doubt. Second, the founders made it clear that it was not their aim to create a new form of status currency. They deliberately made the high school attractive to middle class families -- and thus set in motion the process of status conferment -- but one key purpose in doing so was to draw the support of these families to the newborn common school system and not simply to award credentials. For these men the common schools were seen as an expression of bourgeois-republican values and as a means of preserving them. The schools were erected as model of meritocracy: within this miniature social system, there would be equal opportunity for all students and rewards would be distributed on the basis of achievement rather than social class. In addition to serving as an instrument for the perpetuation of a meritocratic ideal, the high school was seen by the founders as a means of promoting a peculiarly bourgeois notion of education based on a practical business-oriented curriculum. This form of curriculum quickly became an attraction in its own right, but the founders established it because of their deep commitment to bourgeois values rather than its market appeal. In fact, they were uncertain enough about its initial appeal to the middle classes that they reluctantly included a classical course in the early plan of study, which was only abandoned when the use-value of the practical course became established and the commodity-value of the school's credentials became fixed at the college level.

Therefore I am arguing that the early status-conferment capability of Central High School was not the reason for its founding but a by-product of the bourgeois-republican ideals that motivated its founders. In order to save the republic and promote commerce the founders created the high school as a powerful lure for the middle classes, and in the process they inadvertantly produced a new form of educational credentials with an elevated market value.

Class Culture

The reasons I just provided for the creation of Central High School can be incorporated within the framework of only one of the four theories of societal influence discussed in the introduction -- the theory of class culture. While theories of social control and class culture are both based on class domination, the former sees this domination carried out by the direct coercion of one class by another while the latter sees it accomplished by the dominance of one class culture over another. In the cultural view, culture is not a simple reflection of class but maintains partial autonomy from it -- "autonomy" because one is not derived from the other and "partial" autonomy because both arise from the same source in the process of material production.

In these terms then, the impetus for founding Central High School originated in bourgeois culture. The aim of the founders was to extend bourgeois values of meritocracy and practicality to the citizenry as a whole by means of the common schools. This process can be seen as an example not of class control but of ideological domination, because it was carried out on a cultural rather than social level and because its effect was to incorporate rather than coerce or differentiate. If one turns attention from the school system as a whole to the high school, the domination of bourgeois culture is even clearer. First, cultural domination was reinforced in this special case by class homogeneity, since two-thirds of the students were from the middle classes. Second, as the solitary public secondary school for boys, Central was the only logical home for a curriculum devoted to the preparation of students for business. Third and most important, meritocracy was expressed there in an unusually purified form, since level of attainment was almost wholly determined by academic achievement rather than class.

It is my argument therefore that the early Central High School presents an extraordinarily clear model of cultural domination. In the rarified atmosphere at the pinnacle of Philadelphia's educational pyramid, the bourgeois ideal of meritocracy was being put into practice and through this practice transmitted to the students. Within Central's walls, at least, this ideal was translated into reality; and as a result, Central's alumni, of all Philadelphians, had through personal experience the most reason to believe in it. Both the prominence of the school and the prominence of its alumni served to reinforce the ideological impact of the meritocratic ideal on a populace in which few others would have had such a direct evidence that rewards go to the worthy. Central was a meritocracy that worked in a world where if meritocracy existed at all it was in an adulterated or truncated form. In a society characterized by severe inequality yet perceived as a democracy, a belief in merit is the tie that binds the contradictions together. Central played a critical role in helping to cement that belief.

The meritocratic character of Central High School persisted throughout the first 90 years of its existence, as grades consistently provided the best prediction of a student's attainment. In this sense one could argue that the school continued to play a dominant role within the city's cultural life. Its cultural influence waned somewhat during the period of the decline in its position within the school system, but this influence was restored at least in part when the school was returned to its current elite and selective status -- once again the home of the most able, where achievement is the criterion for reward.

The relative stability of Central's cultural role makes it difficult to attribute the transformation of the high school near the end of the century to the same cause as the school's origin. Central's meritocracy remained constant during the entire period under study but the value of its credentials suffered a sharp decline in the years before this transformation. Thus while I explain the creation of the high school as a result of the founders' urge to supply an educational model of bourgeois values, I see the restructuring of the school 50 years later as a response to consumer demand for marketable educational credentials. If this pattern holds for other schools and other school systems, then it may be misguided to look for a single explanation for the social influences on schooling. The findings of this study suggest that public schooling was first supplied in advance of general demand

and then was later transformed when the demand for it exceeded the supply. These results further suggest that the original supply pressure derived from a dominant bourgeois culture while the subsequent demand pressure came from status-group competition over educational credentials. Therefore I am hypothesizing that the class concerns which gave birth to the public school systems in this country were quickly overlaid with status concerns, and that it was the shaping of these systems by bourgeois meritocratic values that spurred the subsequent competition over educational status symbols.

FOOTNOTES

1. Ralph H. Turner, "Sponsored and Contest Mobility and the School System," American Sociological Review 25 (1960): pp. 855-867.

2. Max Weber, "Bureaucracy," in From Max Weber, ed. H.H. Gerth and C. Wright Mills (New York: Oxford University Press, 1946), p. 224.

3. Alexis de Tocqueville, Democracy in America, vol. 2, ed. Phillips Bradley (New York: Vintage, 1945) p. 312.

4. It follows from the previous point that if instruction is only loosely coupled to the administrative bureaucracy of current school systems and if this situation is accepted for the moment as given, then the place to seek reform in instruction is not the district office but the school. One method that had been suggested is to couple principal and teacher more closely within the school by returning today's supervising principals to their former role as principal teachers. Another is to capitalize on the relative autonomy of schools by using them as nests for nurturing new instructional approaches toward which the education bureaucracy may be apathetic or even hostile. Newberg and De Lone show how one innovative program survived the bureaucratic wars by establishing operating control and strong support within the schools and later ceding largely symbolic administrative control to the bureaucracy. Norman A. Newberg and Richard H. de Lone, "The Bureaucratic Milieu," Education and Urban Society 13 (August 1981): pp. 445-458.

5. This discussion leans heavily on David Hogan's analysis of modernization theory in "Making It in America: Work, Education and Social Structure," in Work, Youth, and Schooling: Historical Perspectives on Vocationalism in American Education, ed. Harvey Kantor and David B. Tyack (Stanford: Stanford University Press, 1982), pp. 142-179.

APPENDIX: STUDENT DATA METHODS

The Student Sample

The student data used in chapter three were drawn from records housed at Central High School. Coding was performed at the high school by a group of six student coders under my supervision. The sampling plan called for the selection of all students in the first four entering classes (from 1838-1840) and then all those who entered in the fall of 1850, 1860, 1870 and 1880. Census years were chosen in order to facilitate linking to census records. In 1890 class sizes started to rise sharply; so in order to maintain cohorts at about the same level, 50% of the students were selected that year and only 25% were selected in 1900. (Also in 1900 the graduates not selected in the first pass were placed in a separate sample for later use in analyzing alumni behavior.) I drew samples in 1910 and 1920 that were about three times the size of the earlier cohorts because of the much greater complexity of the records available for those years. This meant taking all of the students entering in 1910 and 60% of the larger number that entered in 1920. The sample sizes and sampling fractions for each year are shown below:

Date Admitted	Sample Size		Sampling Fraction
Fall, 1838 to fall, 1840	246		100%
Fall, 1850	85		"
Fall, 1860	142		"
Fall, 1870	128		"
Fall, 1880	130		"
Fall, 1890	150		50
Fall, 1900	144	(+ 114)	25
Fall, 1910	396		100
Fall, 1920	413		60
Total	1,834	(1,948)	

Every effort was made to reduce the number of coding errors. There was a detailed codebook; coding sheets were preprinted with labels for every field; coders were instructed to transcribe sensitive alphabetical variables such as occupation, which meant that I was the only one to assign numeric codes to these variables; coders were under my supervision at all times; and I checked all coding sheets before sending them to be keypunched. After coding was completed I checked a 4% sample of the cases against the original records and found that errors were relatively few and tended to affect the less important variables. The most important variable to have a significant number of miscodes was grades, where 18 out of about 640 individual course grades were incorrect -- an error rate of only 2%. As a result I am confident that coding error did not pose a major threat to the validity of the data. After the keypunching was finished I sight-verified the punched data against the coding sheets; thus I feel that relatively little error was introduced at this stage either.

For the years 1838-1900 the primary source for student data was a series of large ledger-type rollbooks containing one line of information (spread across two facing pages) for each student. In addition to this, information on degrees was obtained from a general catalogue published by the school. Grades were not recorded on the rolls but the top students were identified from lists of names printed in commencement programs. For graduates of the class entering in 1900, information on later schooling and careers was coded from a series of collected mini-biographies published by the class at ten-year intervals. For 1910 and 1920 the primary source of student data was a set of large record cards which contained the grades for every individual course taken at the high school and which showed for each term the student's success or failure at advancing to the next class. Also for these years there was a three-by-five card which showed a student's progress through the elementary grades in the Philadelphia public schools.

Linking to Census Manuscripts

Once the student sample was coded, the next step was to attempt to locate the families of these students in census manuscripts. For some years this was not practicable: the census before 1850 is aggregated by household and thus is not usable in an individual-level analysis; the 1890 manuscripts were lost in a fire; and at the time the coding was done, no census later than 1900 had been released in manuscript form. (Since then the 1910 records have been opened to the public.) This left five years in which student data could be linked to the census -- 1850, 1860, 1870, 1880 and 1900.

Linking Central students (and those from three other schools) to the census was performed by a group of 10 to 12 student coders under my supervision. The work was carried out on the premises of the Center for Philadelphia Studies at the University of Pennsylvania, using the hard-copy manuscript pages (reproduced from microfilm) located there. For the years 1850-1880 the linkage process was dependent on a street directory generated by the Center. A probability sample from each year had been drawn, put in machine-readable form and then sorted by address. The directory consists of a listing of addresses from the sample along with the corresponding location in the census (book and page number) where that case was found. The linking procedure was to look in the directory for an address near the student's address obtained from school records. The coder then searched through the pages around this location for the appropriate name and address. (In 1850-1870 addresses were not recorded in the census, so the coder had to rely on name alone.)

If this procedure failed, the coder turned to another locating device known as a "grid-square dictionary." The Center had placed a grid over a map of the city, creating a series of squares about one and a quarter blocks in size identified by X and Y coordinates. For a given year the grid location of every case in the Center's sample was noted and the sample was sorted by grid coordinates. A dictionary was then produced which shows all of the places in the manuscripts where this grid square appears. Coders would thus identify the grid containing the student's address and search the referenced locations for the family. The procedure for 1900 was simpler because enumeration districts that year were small. The coder would locate an address on a map of the city and determine which district it was in. The entire district was then searched until the family was found.

The linkage procedure was unusually successful for Central students. While the other three schools registered linkage rates of between 65% and 73%, Central families were located 84% of the time. I see two reasons for this. The records at Central were more complete and the coding of them more accurate than at other schools. Also, Central's constituency was markedly more middle class than the other schools and middle class families are easier to locate than those farther down the social scale. Linkage rates by year are shown below:

Year	Students in sample	Students linked	Linkage rate
1850	85	61	72%
1860	142	117	82
1870	128	112	88
1880	130	108	83
1900	264	228	86
Total	749	626	84%

Multiple Classification Analysis of the Data

The primary technique used in analyzing student achievement was multiple classification analysis (MCA), a form of multiple regression using categorical predictor variables (called factors). MCA constructs a beta for each factor as a whole rather than for each level of this variable as is done in regression with dummy variables. The assumptions upon which regression analysis rests also apply to MCA, with two exceptions. First, one must make the additional assumption in MCA that the model being tested is limited to main effects. In order to comply with this restriction, I performed a large number of analyses of variance, testing for interaction among the various combinations of possible predictor variables used to explain graduation and length of stay in school. The only significant interaction I found among the interesting factors was between class and curriculum; and as a result of this discovery, I employed these variables in separate models.

Making this main effects assumption allows the researcher to relax regression's prohibition against multicollinear predictors. This was particularly useful in my case because the variables in my models, as is often the case with historical data, were more often than not correlated with respect to the dependent variable. Correlation only causes problems for MCA in extreme cases, such as when a level of one factor has virtually the same effect on the dependent variable as a level of another factor. I encountered this problem once during the analysis involving two variables, one showing birthorder and the other recording the number of elder working or dependent siblings. Since an oldest or only child has no older sibling, these two variables were highly correlated. As a result I combined them into a single predictor.

There is one assumption of both regression and MCA which was violated routinely during my analysis, the assumption of homoscedasticity. My primary dependent variable, graduation, is not interval-level but dichotomous: a student was assigned a one if he graduated and a zero if he did not. Under these circumstances the variance of actual scores around the regression predictions will not be equal. The consequences of this are twofold: 1) the regression equation no longer provides the best linear estimate (its variance is not minimized) and 2) tests of significance are no longer unbiased.

Kousser et al. (1) have asserted that these are sufficient grounds for not using MCA with dichotomous dependent variables, but I wish to argue that it was justifiable to use MCA as I did. First, as Bohrnstedt and Carter (2) concluded in their study of the effects of violating regression assumptions, regression is a remarkably robust procedure. They stressed that the only assumption which could never be ignored with impunity -- and the one which researchers frequently overlooked -- is the assumption that the original measurements are relatively free of error. I have already noted the care with which the data were gathered in this study. Although I could not control the errors introduced into the original records by school officials and census takers, I did at least minimize the amount of coder and keypuncher error.

Second, while I reported the results of significance tests along with the MCA tables, I placed very little weight on them. I did discuss the mean rates of graduation predicted by MCA for each level of the factors, but I was using them to stress the differences among these levels rather than to make precise predictions of student behavior. The statistics I relied on most heavily were the betas, which I used as a rough measure of the relative impact of each variable (as opposed to each level) on student graduation. Thus the fact that the predicted means are not as efficient as those produced under conditions of homoscedasticity does not undermine the conclusions I came to using MCA.

Third, the findings of the analysis were quite consistent, both across different models and across time. The central conclusion was that grades mattered most and class mattered little in explaining student attainment. This held true when I used interval-level dependent variables, terms in school and highest grade level achieved, in place of graduation; when I shifted datasets from general sample to census sample to performance sample; and when I examined each cohort separately over an 80-year span of time.

Therefore the robustness of regression, the carefulness of measurement, the reliance on only the broadest MCA statistics, the use of these statistics as rough relative measures, and the consistency of the results -- all argue for the validity of the procedure employed in analyzing the data from this study.

FOOTNOTES

1. J. Morgan Kousser, Gary W. Cox and David W. Galenson, "Log-Linear Analysis of Contingency Tables: An Introduction for Historians with an Application to Thernstrom on the 'Floating Proletariat'," Historical Methods 15 (Fall 1982): pp. 152-169.

2. George W. Bohrnstedt and T. Michael Carter, "Robustness in Regression Analysis," in Sociological Methods 1971, ed. Herbert L. Costner (San Francisco: Jossey-Bass, 1971), pp. 118-146.

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Working Paper No. 6

Making It in America:
Work, Education, and Social Structure

David Hogan

Making It in America: Work, Education, and Social Structure*

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INTRODUCTION

In the course of an intensive investigation of the social life of Muncie, Indiana, in the mid 1920's, Helen and Robert Lynd noted that since the early years of the century there had been a dramatic change in the character of public education. The nature of this change was not difficult to discern. It was all too apparent to the Lynds that a shift had occured from "the traditional dignified conception of what constitutes education" toward an education that seeks "to train for specific tool and skill activities in factory, office, and home." By the mid-twenties, two-thirds of the programs in the high school were of this character; more than any other part of the school curriculum "these vocational courses consist in learning how rather than learning about."

The schools, it seemed to Lynds had "frankly adopted the canons of office and machine shop: they must change in step with the coming of new physical equipment in machine shops and offices, or become ineffective."

Thus:

> "actual conditions of work in the city's factories are imported into the schoolshops; boys bring

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> repair work from their homes; they study auto mechanics by working on an old Ford car; they design, draft and make patterns for lathes and drill presses, the actual casting being done by a Middletown foundry; they have designed and constructed a house, doing all the architectural, carpentry, wiring, metal work, and painting. A plan for providing work in a local machine shop, alternati two weeks of this with two weeks of study throughout the year, is under discussion."

Justifying this "pragmatic commandeering of education," the president of the school board explained: "For a long time all boys were trained to be Presidents. Then for a while we trained them to be professional men. Now we are training boys to get jobs."[1]

For the rest, "the school, like the factory, is a thoroughly regimented world:"

> Immovable seats in orderly rows fix the sphere of activity of each child. For all, from the timid six-year-old entering for the first time to the most assured high school senior, the general routine is much the same. Bells divide the day into periods. For the six-year-olds the periods are short (fifteen to twenty-five minutes) and varied; in some they leave their seats, play games, and act out make-believe stories, although in "recitation periods" all movement is prohibited, As they grow older the taboo upon physical activity becomes stricter, until by the third or fourth

> year practically all movement is forbidden except the marching from one set of seats to another between periods, a brief period of prescribed excercise daily, and periods of manual training or home economics once or twice a week.[2]

In this essay I do not intend to explain how these developments came to pass in Muncie, Indiana, or in any other American city for that matter. Nor do I discuss the motives or ideology that impelled or supported the vocationalizing of education. Rather, I examine the evidence concerning structural links between schooling and the economy in the twentieth century, and evaluate two competing explanations for this realignment of institutional arrangements.

The argument proceeds as follows. First I examine the principle varieties of one of the two competing explanations, modernization theory, and assess how well the principal structural claims of modernization theory stands up to scrutiny. Modernization theory is then examined from the perspective of the status attainment process. Next, I introduce the basic principles of class analysis, the science of the two explanations of the realignment of institutional arrangements. I then lay out in a highly schematic fashion the principal arguments of a class analysis of the institutional realignment of schooling and the economy. The essay concludes with some general observations about the significance of vocationalism in American Education.

MODERNIZATION THEORY: SOME STRUCTURAL ANOMALIES

The grand, governing principle of modernization theory is that the process of modernization is above all a process of "structural differentiation." The meaning of this is quite straightforward. Briefly, modernization theorists argue that premodern or traditional societies are characterized by low institutional specialization: the boundaries between the family, the state, the economy, and the educational process are weak and nebulous. As modernization occurs however, institutions specialize; an institutional division of labor develops with respect to the social functions that are performed. Boundaries between institutions become sharper and more defined: between the family and schooling, between the economy and the polity, and so on. It is this process of institutional specialization that is the heart of the notion of structural differentiation.

In modernization theory, the growth and organization of American schooling are approached as an instance, and an important one, of the process of structural differentiation. Because of the breakdown of traditional family-based arrangements for the socialization and training of children, because of the growth of particular technological and normative requirements of modern occupations and because of the expansion of political participation in modern democratic life, schools come to specialize in the training and socialization of children and to assumer responsibility for the training of students for modern occupational and civic role.

With respect to occupational training, modernization theorists stress two propositions. First, schools are a rational and efficient means of sorting and selecting people so that the talented and motivated attain those positions that are functionally most important in modern industrial society. Second, schools teach the kind of norms and cognitive skills essential for the preservation of social consensus and for the competent performance of work in modern society. Schooling, Robert Dreeben argues, "involves much more than training competence in job related skills; it involves as well the shaping of men's states of mind, and gaining their willingness to accept standards of conduct related to holding a job as well as to master its component activities." Of particular importance are the norms of independence, achievement, universalism, and specificity.[4] An important variant of this normative emphasis has been developed by some historians who have focused on ethnocultural conflict and the development of "modern" attitudes and norms towards work, schooling, and political life among immigrant groups.[5]

The backbone of modernization theory, however, is the question of technological change and the demand for skilled labor - particularly the claim that industrialization generated a demand for skilled labor and, for schooling.[6] Douglas C. North argued, apropos America's industrialization in the nineteenth century, that

> The sustained expansion of manufacturing . . . requires a large investment in human capital. While the operatives in the factory itself may not be required to possess substantial skills, the spread of manufacturing with expansion in the size of the market leads to vertical disintegration and the development of a host of highly trained and skilled ancillary and complementary functions. I am thinking not only of the development of specialized capital goods industries and sholesale and retail marketing facilities, but equally of the wide variety of professional services which are required.[7]

H. J. Habakkuk was even more emphatic than North about the relationship between industrialization ("mechanization") and skills. Habakkuk contended that machines and skilled labor are complements in production, not alternatives, because skilled workers are required to build the machines. In all probability, he argued, "the manufacture and use of the more capital-intensive technique required more skilled to unskilled labor than the labor intensive."[8]

It is but a short step from here to an explanation of the expansion of schooling. Martin Trow, for example, used two-step argument. He first noted the great "changes in the occupational structure" reflecting "tremendous changes in the economy and organization of work" as a result of large-scale mechanization and bureaucratization. Accordingly, "The growth of the secondary-school system after 1870 was in large part a response to the pull of the economy for a mass of white-collar employees with more than an elementary-school education." But second, he added, "changes in the occupational structures do not provide the whole explanation of the extraordinary growth of secondary and higher education in the United States", for "the changes in the occupational structure have raised the educational aspirations of the large parts of the American population, and the educational system has been responsive to these higher aspirations."[9]

With a closer look at the central assumptions of modernization theory, however, the theory quickly begins to unravel. Two interrelated difficulties stand out. One is that modernization theory relies on a human capital explanation of technology and of increasing skill requirements as the primary cause the expansion of schooling. The second difficulty, a step further back, is that modernization theory relies on a neo-classical theory of production and the nature of the firm.

The basic argument concerning technology and increasing skill requirements is derived from human capital theory: a growing demand for skilled labor increases the individual returns to investment in education, and other things being equal (direct and opportunity costs), the demand for education rises. The theory assumes that changes in the mix of goods and services and changes in technology produce an increased demand for skilled or educated labor. This increase in demand leads to a rise in the wage of educated workers, which produces, in turn, an increase in the incentive to invest in schooling and an increase in voluntary enrollment.

To the extent, then, that human capital or market mechanisms operated, we would expect to observe increases in per capita employment in occupational categories associated with high levels of schooling, and perhaps increases in skill requirements within certain categories or sectors. This expectation rests on the further assumption that production processes provide relatively few opportunities for substitution among workers with different amounts of education (what economists call "low substitution effects"). Given this assumption, observed shifts in employment would indicate underlying shifts in the demand for labor. Likewise, the argument that skill requirements increased as a result of industrialization could be measured by (a) observing whether industrialization did in fact require greater numbers of skilled workers; and (b) observing whether the shift to capital-intensive techniques in fact increased the average level of skill required of industrial workers.

Sadly for modernization theory, the available body of research provides very little support for its claims. Some suggestion of the difficulties facing modernization theory can be gained by noting some of the Lynds' observations of changes in the work life of Muncie between the 1890's and the mid-1920's.

First of all, the Lynd's noted that the work of the craftsman was being transformed and his craft disappearing. "Inventions and technology," they wrote, "continue rapidly to supplant muscle and the cunning hand of the master craftsman by batteries of tireless ironmen doing narrowly specialized things over and over and merely 'operated' or 'tended' in their orderly, clangorous, repetitive processes by the human worker."[10] Gradually, "the demands of the ironman for swiftness and endurance rather than training and skill" had led to the "abandonment" of the system of apprentices and master craftsmen. Work had been transformed "from a system in which length of service, craftsmanship, and authority in the shop and social prestige among one's peers tended to go together to one which, in the main, demands little of a worker's personality save rapid, habitual reactions and an ability to submerge himself in the performance of a few routinized easily learned movements."[11]

Change could be seen everywhere. In a machine shop, 75 percent of the labor force of 800 men "can be taken from farm or high school and trained in a week's time." In a glass plant, 84 percent of the tool-using personnel, excluding foremen, required one month or less of training; in Middletown's leading foundry "60 percent of all the castings produced are made by a group of newcomers who cast with the help of machines and require only a fortnight or so of training."[12] And with the disappearance of the apprenticeship system, "the line between skilled and unskilled worker has become so blurred as to be in some shops almost nonexistent," with the consequence that avenues of mobility were disappearing. All that was possible was promotion to a foremanship, and that was a relatively rare event. For example, in six Middletown plants employing an average total of 4,240 workers during the first six months of 1923 - admittedly a time of economic recession - there were ten vacancies for foremen over the period of 21 months from January 1, 1923, to October 1, 1924. In effect, in a year and three-quarters there was a chance of promotion of 1 in 424; and there was some evidence that "the chance of becoming a foreman, small as it is, would appear to be somewhat better than it was a generation ago." And on top of the small chance of becoming a foreman, "increasing technological complexity and the resulting tendency to insert college-trained technical men into a force between foreman and owners appear to hinder a workman's progress beyond a foremanship more than formerly."[13]

Other evidence, of a more general nature, supplements the findings of the Lynds. For one, the expansion of schooling far exceeds the expansion of the occupational structure, which suggests that at best the latter can only explain part of the former.[14] Second, the demand for skilled labor and the proportion of it in the manufacturing labor force has diminished over time. Not only did the Lynds note this phenomenon in Middletown, but many others did so as well. Weyl and Sakolski in 1906, in a trade-by-trade analysis, and Paul Douglas in the 1920's, in an industry-by-industry analysis, both observed a decline in skill requirements and in the demand for skilled labor. The Griffiths describe such a decline in Poughkeepsie, New York. Alan

Dawley found similar trends in the shoe industry in nineteenth-century Lynn, Massachusetts; Brody and Stone in the turn-of-the-century steel industry; and Ozanne in the farm implements industry. Ericksen and Yancey estimated that between 1850 and 1880 the proportion of skilled workers in Philadelphia's manufacturing labor force dropped from 46.9 percent to 36.8 percent, and that between 1910 and 1930 the proportion of skilled workers in hand trades declined from 24.8 percent to 22.8 percent. In Chicago, the percentage of draftsmen, foremen, and other skilled workers dropped from 26.7 percent in 1880 to 17.12 percent in 1930. Harry Braverman estimated that although the number of engineers in the U. S. had risen dramatically (2000 percent between 1880 and 1929, for example), "taken together, the technical engineers, chemists, scientists, architects, draftsmen, designers, and technicians represented not more than 3 percent of the total labor force in 1970," and that all "the technical knowledge required to operate the various industries in the United States" could be found in this group.[15]

Taking a different approach, Folger and Nam estimated that only 15 percent of the increase in education of the American work force during the twentieth century could be attributed to shifts in the occupational structure (that is, as a consequence of an increase in the demand for skilled labor), and that the remainder of the increase has occured within job categories.[16] Moreover, there is some striking evidence, developed and collated by Berg and Collins, that the skill requirements of many jobs in the economy are significantly lower than the educational requirements.[17] There is also persuasive evidence, initially analyzed by James Bright and later reanalyzed by Braverman, that although technological change has created many new jobs, most of them are unskilled monitoring jobs; few require substantial knowledge or technical training. Highly complex equipment does not usually need highly skilled operators, since the skills are built into the machines themselves. As Bright concluded, contrary to his presuppositions, "there was more evidence that automation had reduced the skill requirements of the operating labor force, and occasionally of the entire factory force, including the maintenance organization."[18]

Other evidence suggests that most clerical jobs either have undergone considerable skill dilution or require only low levels of skill, and such jobs account for by far the greatest part of the expansion in the occupational structure of the labor force since 1900. Since 1960, for example, the white collar sector has expanded by 15 million people, but about four-fifths of this was in sales and clerical jobs.

All in all, the evidence is consistent: the proportion of skilled labor in the labor force has diminished, skill requirements for most jobs are low or diminishing, and educational certificates have little direct relationship to skill requirements. Accordingly, the expansion of schooling cannot be explained structurally by reference to skill requirements and the demand for skilled labor, which is to say that the reliance of modernization theory on the human capital market to link the economy and education is unsupportable.

MODERNIZATION THEORY: "EXPANDING UNIVERSALISM"

According to modernization theory, as a society modernizes prescription is replaced by achievement as the main determinant of the allocation of income, power and prestige. People gain wealth, power, and prestige not by virtue of birth, but by virtue of achievement, and the road to achievement starts at the schoolhouse door. In modernizing societies, education increasingly mediates the relationship between family background and economic success. In effect, a modern society is a meritocracy.

This development is held to be desirable for two reasons. First, it is efficient: it makes better use of talent, particularly educated talent. This proposition has been formalized by sociologists into the "functionalist theory of stratification."[19] Second, it is desirable because it is "democratic": the spreading of equality of opportunity by means of education enables people to rise according to their own efforts. In the United States, this is called "democratic capitalism"[20] or "expanding universalism." "Objective criteria of evaluation, that are universally accepted", Blan and Duncan argue, "increasingly pervade all spheres of life and displace particularistic standards of diverse ingroups, intuitive judgements, and humanistic values not susceptiable to empirical verification.

They go on:

> Education assumes increasing significance for social status in general and for the transmission of social standing from fathers to sons in particular. Superior family origins increase a son's chances of attaining superior occupational status in the United States in large part because they help him to obtain a better education, whereas in less industrialized societies the influence of family origins on status does not seem to be primarily mediated by education.[21]

Although much of this is borne out by history, the record is not as clear-cut as Blau and Duncan suggest. From the mid-nineteenth century onward, education has indeed increasingly mediated the relationship between peoples family background and their occupational achievement and income. There is, however, considerable controversy over the strength of the statistical relationships between family background, educational achievement, occupational success, and over the nature of the linking processes between them.

Concerning the relationship between family background and educational achievement, the evidence is conflicting. Some researchers have found a substantial impact of family background on educational achievement; others have found none or little. Research findings on the relationship between educational achievement and occupational attainment, particularly for the middle to late nineteenth century, are similarly ambiguous.[22] In later periods, however, the association between education and occupational success becomes dramatic, but interpretations of the causal linkage still very, and scholars differ over the significance of family background. Blau and Duncan argue that "a man's social origins exert a considerable influence on his chances of occupational success," but that his own education and his early job experience "exert a more pronounced influence on his success chances." They conclude that "although most of the influence of social origins on occupational achievement is mediated by education and early experience, social origins have a continuing impact on careers that is independent of two variable pertaining to career preparation. Education exerts the strongest direct effect on occupational achievements, with . . . the level at which a man starts his career being second.[23]

In various ways, other studies either confirm or conflict with Blau and Duncan's findings, although Jencks went to great pains to demonstrate that education is a relatively modest determinant of adult success, his own figures belie his argument and tend to support Blau and Duncan. Arguing that education left more than half of the variance in occupational attainment unexplained, Jencks downplayed, unjustifiably by most canons of statistical reasoning, the high correlation of .65 between education and occupational status.[24] Moreover, as Boudon points out, relationships that are objectively indeterminate for the individual may be anything but that with respect to the functioning of the social structure. For example, correlations between education and occupation may be partially influenced by changes in the occupational structure that create a disjunctive between the systems of work and education.[25]

Bowles and Gintis take a different tack. They acknowledge that educational achievement is highly correlated with occupational attainment. For example, an individual in the ninth educational achievement decile has a 34.3 percent chance of attaining a position in the top fifth of income earners, whereas an individual in the bottom decile in education has only a 3.5 percent chance. Nevertheless, they argue, this relationship cannot be explained by cognitive ability (IQ), for when IQ is held constant it barely alters the statistical relationship. Thus a person in the ninth decile in education is nearly ten times as likely to be in the top quintile in income as a person from the bottom educational decile. This relationship basically holds even with IQ held constant: among people with identical adult IQ scores, someone from the ninth education decile is still eight times more likely to be in the top income quintile than someone from the bottom decile. Bowles and Gintis therefore conclude that economic success tends to run in the family "almost completely independently from any inheritance of IQ, whether it be genetic or environmental." Finally, Sewell and Hauser argue, following Blau and Duncan, that higher education is an important determinant of occupational success, that a father's occupational status still directly affects a son's occupational status, and that, contrary to Bowles and Gintis, cognitive ability matters a great deal.[26]

Despite controversy of this sort, there is little disagreement that education is the prime institutional factor in the relationship between the family and occupational success. The role of education in the status attainment process represents an important and even pivotal aspect of modernization. Yet one issue, the relationship between educational achievement and income, poses a severe challenge to the part of modernization theory that posits an increasingly "universalistic" process of status attainment.

In twentieth-century America the gap between the least educated and the most educated, in years of schooling, has progressively diminished; and yet, contrary to what modernization theory predicts a concomitant reduction in the income gap between the richest and the poorest has not materialized.[27] Lester Thurow, for example, points out that in 1950 the bottom fifth of the white male population had 8.6 percent of the total number of years of education, and the top fifth had 31.1 percent. By 1970, the bottom fifth had risen to 10.7 percent and the top fifth had fallen to 29.3 percent. But despite this equalization of educational achievement, the distribution of income among white males in fact became even more unequal. Between 1949 and 1969 the share of total income going to the lowest fifth fell from 3.2 percent to 2.6 percent, and the share going to the highest fifth rose from 44.8 percent to 46.3 percent.[28]

Moreover, as Mincer and Chiswick point out, a significant increase in school achievement would only reduce income inequality by a negligible amount, even if other offsetting factors were removed. The income gap between blacks and whites reveals the same discrepancy. Between 1952 and 1968 the mean education of black male workers rose from 67 percent to 87 percent of that of white male workers (a 29 percnet increase), yet median wage and salary incomes rose only from 58 percent to 66 percent, an increase of only 13 percent. Moreover, most of this increase in income could be attributed to black emigration from the South, where the relative income of blacks was lower.[29]

The standard, or neoclassical, explanation of income discrimination is the one developed initially by Gary Becker.[30] Assuming that black and white workers, or male and female workers, did not differ in their access to human capital or in their marginal productivity at work, Becker would argue that black-white and male-female differnces in income can be explained by exogenous "tastes for discrimination" on the part of employers. Employers failing to hire blacks and women, with their lower wage rates, would place themselves at a competitive disadvantage in respect to other employers. The most obvious problem of this explanation, of course, is its a bogus problematic. Employers have indeed employed blacks and women; they did so, however, not in labor markets characterized by wage competition, but in highly segmented and stratified labor markets whose roots go back into the nineteenth century characterized by job competition. Furthermore, this explanation assumes a theory of production in which purely technical, input-output cost considerations predominate, an assumption that cannot be substantiated. Finally, it assumes a simple human capital mechanism linking education to the economy.

In other words, the theory of human capital misconstrues the nature of the linking mechanisms between education and the labor market. An adequate account of the relationship between education and income requires an explanation of the structural links between education and the network of labor markets; a description of when and why these links developed and how they were sustained; and an account of the genesis of labor market segmentation and its relationship to the organization of production. To answer, these questions, however, requires a theoretical framework different from modernization theory and its academic progeny, the functionalist theory of stratification and neoclassical human capital theory.

THE THEORY OF CLASS STRUCTURATION

Essentially, class analysis is an analytical tool, or rather a set of analytical tools, for explaining how societies of a particular kind develop and function over time. A market in labor is a structure of social relations: the class relations between labor (no matter how well or poorly paid) and capital (no matter how benevolent or malevolent, owner controlled or managerically administered). The Lynds described the disappearance of economic self-sufficiency or independence; nearly all of those "who earned Middletown's living" worked for wages in order to buy "the material necessities of life."[31] It is the development of a structure of social relations and institutional arrangements around labor markets that is the analytic focus of class theory.

The growing importance of class relations in American history can be measured by the growing importance of the market in labor. At the time of the signing of the Declaration of Independence, 80 percent in the non-slave U. S. labor force were self-employed entrepreneurs (by far the most were farmers); and about 20 percent were wage and salaried employees. One hundred years later only 36.9 percent were self-employed entrepreneurs; wage and salaried employees had increased to 62 percent; and 1.1 percent were salaried managers and officials. By 1974, 83 percent of the labor force were wage and salaried employees; 8.2 percent self-employed entrepreneurs; and 8.8 percent salaried managers and officials.[32] Where once the majority of non-slave Americans were economically independent, by the time of the Grant administration a clear majority were selling their labor in the market. Where once the majority lived on farms as self- sufficient or commercial farmers, or worked in "ten footers", making shoes, or in bakeries, saddleries, or blacksmith or wagon-making shops as independent commodity producers, by the late nineteenth century most belonged to the wage-labor force of industrial capitalism and lived in urban areas.*

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*Even as late as 1873, three-quarters of the American population lived in rural areas and half worked in agriculture; but by the 1890's rural families constituted less than two-thirds of the population and the agricultural work force was down to 42 percent. By 1900 agriculture accounted for 30.9 percent of the labor force; by 1910, 17.4 percent; by 1972, only 3.8 percent. At the same time, whereas in 1790 only 5.1 percnet of the population lived in towns in excess of 2,500 and in 1830 only 8.8 percent, by 1860 19.8 percent lived in such towns; by 1910 the figure had reached 45.7 percent, and by 1920 it was well past the halfway mark. By 1970

This process of "proletarianization" - the progressive expansion of markets in labor - is the distinguishing feature of captitalist societies. The principal object of class analysis is to explain how and why the capitalist mode of production developed, and overwhelmed alternative modes of production.

Of course, the structure of a society is far more complex than its productive relations, no matter how important they are. In capitalist societies, although the existence of labor markets at the point of production is definitive, class relations are not limited to the social relations of production. Societies also have political and ideological relations; but in capitalist societies these are progressively "structured" into a class form consistent with the basic relations of productive activity. Together these class relations constitute the "class structure" of capitalist societies.[33] These structures are not structures of inequality but of class relations. At different times these structures will vary in composition, strength, and cohesion; class analysis seeks to explain why and how.

In addition, interlaced through the structure of class relations are webs of institutional arrangements, some obvious, others not: the private ownership of the means of production and the product of the labor process; the technical organization of production and its relationship

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(cont.)*almost three times as many people lived in urban areas as in rural. U. S. Bureau of the Census; Historical Statistics of the United States, Colonial Times to 1970 (Washington, D.C., 1976), pt. 1, pp. 11-21; Blake McKelvey, American Urbanization: A Comparative History (Glenview, Ill.,), pp. 24, 37, 104; Michael Reich "The Evolution of the U. S. Labor Force: in Richard E. Edwards, Michael Reich, and Thomas Weissiol, eds., The Capitalist System (Englewood , N.J.; 1972) p. 182.

to the opportunity structure and to mechanisms of mobility; the spatial destribution of these opportunity structures; the differentiation of labor markets by race, sex, ethnicity, region, and education; the social organization of family life and the ralations between the sexes and the generations; the stratification system and its relationship to the opportunity structure; and the degree of articulation between social institutions, such as, schooling, and the economy. Together, the structure of class relations and their surrounding institutional arrangements constitute what Nicos Poulantzas terms "the social division of labor as a whole."[34]

The social division of labor did not, obviously, spring up overnight, not even in a society that fancies itself to be the offspring of an immaculate conception between Calvin (or Locke, or some eighteenth-century Scottish moral philospher) and the Virgin Forest. Rather, it was the product of almost 200 years of American history. It was to deal with such a history that class analysis was designed. With class analysis it is possible to study the way a society like America, increasingly characterized by markets in labor, is transformed from an overwhelming rural agricultural society into a mature industrial capitalist society.

The principal analytical tool provided by class analysis to explain such developments is the concept of class structuration, or what Anthony Giddens calls structuration around the "class principle". Giddens views this as the most appropriate way to conceptualize how a society becomes progressively characterized by class structures.[35] In America, after the advent of labor markets early in the nineteenth century, the "class principle" became the prevailing mode of structuration: By the end of the century, a distinctive capitalist structure of social relations and institutional arrangements was well established. Alternative modes of structuration, associated with different modes of production and ideologies, had, for the most part, been pushed into the dust bin of history. Something of the nature of class structuration can be illustrated by a few developments in American life in the past 150 years.

As noted earlier, a market in labor did not suddenly appear. It took almost a hundred years for the labor market to reach a point where the overwhelming majority of workers were wage earners. Indeed, even in the post-second World War era new groups of workers, such as blacks and women, have been incorporated into the wage labor system.[36] Purely capitalist labor markets, in which workers were stripped of all ownership of the means of production and entered the labor market with nothing but their labor to sell, developed slowly and usually only after great resistance and conflict. (Homestead, 1892, is a conspicuous example of this process in the steel industry). The creation of a distinctively capitalist labor process wholly designed and controlled by capital - or what Marx called the shift from formal to real subordination - was also long and drawn-out, varying within and between industries often engendering considerable conflict. The opportunity structure of America in the 1920's was very different from that of fifty years before: in particular, education had come to consitute the principle mechanism of social mobility. Finally, and of particular relevance to the present essay, new institutional networks gradually evolved between the economy, education, and the family, changing the institutional relations of American society.[37]

The transformation of political and ideological structures was more complex, in part because of the peculiar juxtaposition of the political and industrial revolutions in America, a fact of considerable importance in understanding the process of class formed in America. Nevertheless, from the early years of the nineteenth century, political and ideological relations were under continual pressure and were a source of social conflict. successive waves of immigrant groups who arrived in America with little in common except grit and poverty were eventually forged into an ethnically differentiated working class with common and parallel cultural forms and institutions. but the issues surrounding the process of class formation are not just empirical and theoretical, but conceptual, and even epistemological. It is these issues that are at the center of the recent controversy between E. P. Thompson and the Althusserians.[38] These controversies need not detain us here, although, it should be emphasized, they cannot be avoided in any concrete analysis of the process of structuration.

In the remainder os this essay I will discuss three of the topics that a class analysis of education highlights: the structural links between education and the economy; the organization of schooling; and the political and ideological mechanisms that link education to the economy.

THE STRUCTURATION OF SCHOOLING AND THE ECONOMY

What links the economy to education, what mechanisms create and sustain these links, and what is the relationship between education, skills, and productivity? The answers to the first and third questions are closely related, and turn out in the end to hinge upon the relationships between the labor process and labor market structures. The answers to the second depends on the answers to the first and third.

One may approach the relationship between education, skills, and productivity from three perspectives. It might be argued that they are not linked, or that they are linked but only indirectly, or that they are directly linked. Collins's conflict theory of education stratification and Berg's theory of credentialism are leading expressions of the first view: educational credentials represent simply the impact of demographic demand and supply factors, rather than work-related skill requirements. For Thurow, the linkage in indirect; educational credentials are important not for any skills they signal, but because they screen workers for the kinds of personality or character traits assumed to be associated with various levels of productivity.[39]

Bowles and Gintis, on the other hand, on the basis of research by themselves, Edwards, and others, argue that educational qualifications do not reflect cognitive or technical skills that employers seek, but personality or affective traits compatible with the social relations of production. Thus education is linked to productivity, but not to skill requirements technically conceived. Productivity is a question not of the technical relations of production but of the social relations of production. The relationship between productivity and education varies, however, with the nature of the labor market. Education has little relationship to productivity in male secondary labor markets; some relationship in female secondary labor markets: and only "fairly little" relationship to primary blue-collar productivity. In independent primary labor markets, however, educational credentials often have a very close relationship to both skill requirements and job productivity.[40]

We are now in a position to describe in some detail the nature of the links between education and the economy. Schools are linked not to the economy in general, but to the labor process and labor markets. And since the structure of labor markets is dependent on the organization of the labor process, what Edwards calls "structures of control," it is these that determine the nature of the demand for labor and the nature of the links between schooling and the economy.

The cornerstone of the argument is the relationship between the structure of the labor market, the structure of control, and behavior requirements. Edwards first distinguishes between four major structures of control and the corresponding worker attributes that a firm expects and rewards. In "simple" control, characteristic of entrepreneurial firms in which the owner exercises direct personal control over the labor force, no particular set of personality attributes are required, apart from a general deference to the employer's power. In "hierarchical: control, characteristic of firms too big for simple control, the principle of control is nevertheless similar: each boss, whether a foreman, supervisor, or manager, recreates in his shop the situation of the capitalist with entrepreneurial power. Each boss has full rights to fire and hire, evaluate and promote or demote, discipline, reward, and so forth. In effect, the negative sanctions are the more important; workers need to obey the boss and be sufficiently deferential. But the required behavior varies greatly according to the particular foreman and the conditions of employment.

Simple and hierarchical control structures are particularly characteristic of secondary labor markets, which include small manufacturing jobs, service and retail jobs, and temporary and typing-pool office work. In "technical" control, characteristic of firms in subordinate primary labor markets (automobile and steel plants, assembly-line production work, and machine-paced clerical work), machinery and the flow of work are designed so that the worker must follow the dictates of the machines and the industrial engineers. In technical control the system forces workers to respond to machine pacing, but beyond that it leaves workers relatively free from other demands on their behavior, besides punctuality, regularity, deference to supervisors, and the ability to work consistently at high speed in boring, monotonous jobs. In the fourth structure of control, however,"bureaucratic control," characteristic of firms in the independent primary labor market, personal attributes are of considerable importance. Edwards delineates three principal areas of compliance or behavior within such firms: rules orientation; predictability and dependability; and internalization of the firm's goals and values.[41]

Edwards next attempts to link the segmentation of the labor markets to the segmentation of the labor process, arguing that the two are historically linked: each labor market structure corresponds to a particular form of labor control. Labor markets, in other words, "are segmented because they express a historical segmentation of the labor process; specifically, a distinct system of control inside the firm underlies each of the three market segments."[42] The fundamental basis of the division of labor markets is to be found in the labor process, and not in the labor market itself.

The third and final step of Edwards's argument is to link two sets of issues: on the one hand, the nature of the job skills, behavioral requirements, experience, and other technical characteristics of the labor force, and on the other, schooling. He does so in a fashion very different from human capital approaches:

> These characteristics "are usually thought to create different types of labor (and so they do), and therefore to be the basis themselves of different treatment in the labor market. The relevance of these technical attributes, even their preeminence in certain cases, cannot be denied. However, the analysis presented here suggests that it is the system of control that creates the context within which experiences, training schooling, skills, and other attributes assume their importance.[43]

For this reason it is now possible to see why experience and schooling do not explain secondary workers' income but do explain primary workers' income: secondary work is organized so as to minimize the need for experience and schooling, whereas primary work is organized so as to utilize these factors.[44] In effect, it is not wage competition but the nature of work that determines income.

All of this is more than plausible; yet Edwards's account is not without its difficulties. The difficulties, however, are less conceptual and theoretical than empirical. For example, he simply asserts, rather than demonstrates, the existence of tight structural links between the labor process and the labor market, the labor market and schooling. The task facing class analysis, then, is to demonstrate the existence of such structural linkage.

The general research program suggested by a class analysis of the linkage between schooling and economy is thus, in principle, quite straightforward. It consists of three analyses: (1) the structure of labor markets and the development of distinctive control structures within the labor process; (2) the organizational features of schooling that seemingly have structural links to the economy; and (3) the political and ideological mechanisms that link schooling to the economy.

In general, it is clear that the structural links between schooling and the economy have varied considerably over time. That schools play important functional economic roles in twentieth-century American capitalism, and that they are linked not to the economy in general but to labor markets and labor processes in particular, in no way imply that this was the ease in the nineteenth century, schooling did not play an important role in allocating students into the labor force. (Nor was schooling so important in the attainment of status as in the twentieth century). For the most part, the more important role of schooling in the nineteenth century was to teach children the dominant bourgeois political and ideological practices of nineteenth century America. It was only during the Progressive Era that schooling was given, or took up (there is some dispute), the economic responsibility of training, certifying, and differentiating the labor force.[45]

The establishment of structural link between the economy and schooling during the Progressive Era was not a simple affair. Moreover, we can assume that as the structure of control of the labor process and the nature of the labor market changed, so too the process of recruitment into the labor force changed. These considerations force attention to three features of the historical development of these relationships that class theory brings out. One is the development of capitalist labor markets (in which workers had nothing to sell but their labor power) that are subsequently stratified by race, sex, ethnicity, geography, and education. A second is the transformation of the labor process, largely because of mechnaization from one with a great deal of craft control to one designed and controlled mainly by capital and very little by labor. Finally, the third encompasses the changes in the training and recruitment of the labor force: vocational education and vocational guidance, business and trade schools, employment agencies, union hiring halls, internal labor markets, and so on.

The analysis in each of these areas will need to be sensitive to variations by region, by industry, and even within particular industries. The aim of such analyses would be to describe and, if possible, to measure the development of simple, hierarchical, technical, and bureaucratic forms of control; the development of corresponding segmented labor markets; and the creation of internal labor markets, which Doeringer and Piore assert are characteristic of most large firms.[46]

Educational credentials are crucial mechanisms internal labor markets, perhaps more significant in internal labor markets than in secondary or subordinate primary labor markets, though not more than in independent primary markets. It is also necessary to analyze the development of professional labor markets. It seems that educational credentials grew increasingly significant as professionals attempted to create and guard a separate labor market for their services. Magali Larson's account of how practitioners of medicine and law were able, since the nineteenth century, to create in effect a primary labor market for their services is, exemplary. She treats professionalization as a process in which producers of special services sought to set up a controlled market for their expertise and "to translate one order of scarce resource - special knowledge and skills - into another - social and economic rewards." These goals were achieved by creating a monopoly of expertise in the market and a monopoly of status in the stratification system. These monopolies were based on a principle of legitimacy derived from socially recognized expertise; that is, a system of education and credentialing. As the main function of professions shifted from the economic one of linking expertise and the market to the ideological one of justifying inequality of status, it became crucial to restrict education, the source of social legitimacy.

In short, the theoretical core of the analysis of the structural relations between work and schooling is the analysis of the labor process and its transformation over the past 150 years or so. Not only did the demand for skilled labor change significantly, but also the character of the skills themselves. The continual reconstitution of the labor process upon new technical and social foundations generated a demand for new kinds of skills and new kinds of schooling. The skills were increasingly less technical than social and affective; they relied less on cognitive skills and judgments than on attitudes and behavior appropriate to the organization of the labor process. These social skills, and their internal differentiation, were increasingly necessary, since the specialized and mechanized labor processes placed a premium on social and affective traits. Productivity, and not just social control or protection of the prerogatives of capital, demanded a properly socialized and disciplined labor force.

Other lines of research also support the validity of this class analysis. One line concerns the structural relationships between education and inequality. Raymond Boudon, for example, analyses the relationship between income, occupational structures, and education, and finds the key issue to be whether the expansion of school attendance and the decrease in educational inequality brings about a decrease in inequality of social mobility.

For Boudon the expansion of education is generally consistent with a highly stable mobility structure. This is because the growth in the number of high-status positions has not been commensurate with the growth in the supply of educationally qualified individuals, so that the occupational chances of persons at lower levels of education decrease as the demand for them is outstripped by the supply of educationally qualified persons. Those with the most education retain their traditional advantage, but for groups at intermmediate levels of schooling, occupational opportunities decline. Potential gains in status, by increased schooling, are lost because of declining occupational opportunities. Consequently, the pattern of social mobility remains unchanged by increases in educational achievement.[48]

Although there is ample evidence that the problem with which Boudon is concerned is real, there are difficulties in his explanation.[49] But rather than summarily dismissing this approach, we might consider other lines of argument. One such line is suggested by Ralph Collins. Whereas Boudon argues that there is no reason to expect an increase in social mobility or equality even if there is greater equality of education, Collins argues that greater educational achievement by less-educated groups will not increase social mobility if the more educated groups are able to maintain a relative advantage over the less educated.[50]

Collins, whose approach is based on a Weberian theory of status competition, proposes that competition and conflict between status groups generate an increased demand for schooling that has little nor nothing to do with skill requirements in the economy. People seek education because they desire status and believe that education is the means of attaining it. Low- and middle-status groups will thus seek to raise their relative position in the competition for status. And since educational qualifications both symbolize high status and are important in achieving it, these low- and middle-status groups attempt to gain higher educational credentials. But of course, to the extent that such groups are able to increase their educational qualifications for example, from five to seven years high-status groups will seek to preserve their relatively privileged position by raising their qualifications. In response, low-status groups will again attempt to close the gap, and so on in a continuous spiral.

The principal consequence of this spiral, according to Collins, has been to increase the supply of educated labor. This in turn has allowed employers continually to upgrade tha educational requirements of jobs that to all intents and purposes have not changed in their objective skill requirements; thus the credentials gap noted by Berg.[51] Cognitive skills are produced in excess of the demand for them; an imbalance appears between the demands of the economy and the supply of educated labor. Thus the expansion of educational achievement does not necessarily decrease inequality of opportunity. High-status positions are still out of the reach of most low-status groups, despite levels of educational that earlier would have entitled them to such positions. On such grounds one could explain the loss of faith in education suggested by the titles of two recent books, The Case Against College and The Over-educated America. By Collins's account, confidence in education as a means of social mobility has decreased with the inflation of educational credentials and with the growing belief by employers that job-specific training, rather than educational credentials, is the better way to acquire high-performance workers.*

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*As a model to explain the relationship between education and income or mobility, Collins's model has much to recommend it. As an explanation of the expansion of schooling, however, it has difficulties. First of all, it does not explain the politics of educational expansion; that is, it does not explain the politics of compulsory education, neighborhood schooling, differentiated education, vocational education, testing, and the stratification of higher education. Recent research suggests that elites imposed many of these features on the educational system in an effort to ensure the incorporation of students into the various ideological practices of capitalist society and to develop institutions that would effectively channel students into a differentiated and stratified labor market. Second, Collins's theory of status competition seriously misconstrues the motives of working-class parents, and many middle-class parents, in sending their children to school, and it fails to account for such motives or explain their significance in different class cultures. For the most part these deficiencies are due to Collins's undifferentiated notion of market. Working-class and middle-class educational behavior was less a search for status than a rational response to a wage labor society--education was widely believed to be first and foremost the key to economic survival. People send their children to school in order to enhance the market value, whatever its fluctuations, of their children's labor power. Educational behavior then cannot be understood independently of the structure of class relations, particularly in the wage labor system. Finally, Collins's theory of status competition fails to consider the organizational features of schooling.

To some extent, Collins's position can be supported by what Lester Thurow calls a "job opportunity" model of the relationship between education, work, and inequality. For Thurow, the American economy is characterized less wage competition (as theorists of human capital assume) than by "job competition." Instead of people looking for jobs, there are jobs looking for "suitable people." In a labor market based on job competition, an individual's income is determined by (1) his relative position in the labor queue and (2) the distribution of job opportunities in the economy. Although education can affect the shape of the labor queue, this does not mean that it changes the distribution of income, since this is a function, not only of the labor queue, but also of the distribution of job opportunities.[52]

This is a provocative argument, with important implications for understanding the function of education in the economy. Thurow summarizes the implications in this way: "In a labor market based on job competition, the function of education is not to confer skill and therefore increased productivity and higher wages on the worker; it is rather to certify his 'trainability' and to confer upon him a certain status by virtue of this certification. Jobs and higher income are then distributed on the basis of this certified status".[53]

In other words, the labor market is not primarily a mechanism matching the demands for and supplies of different job skills (acquired in school, for example), but for matching trainable individuals with training ladders: "Since most skills are acquired on the job, it is the demand for skills which creates the supply of job skills." Employers attempt to pick and train workers so as to generate the desired productivity with the least investment in training costs. For new workers and for entry-level jobs, it is the "background characteristics" of the workers their age, sex, race, ethnicity, educational attainment, previous skills, and so forth that form the basis of selection. The "national labor queue" thus depends on the distribution of these background characteristics and on employers" ranking of different background characteristics for the "screening" of individuals. Alterations in the distribution of education can influence the shape of the labor queue, but not necessarily the distribution of income, since this is also shaped, perhaps decisively, by the distribution of job opportunities.

At this point of the argument, however, both Thurow and Collins run into difficulty. In Collins's case, his theory of status competition simply does not provide any explanation for the distribution of job opportunities in the economy, and it fails to supply an adequate account of the shape of the labor queue. Thurow has similar problems. A number of economists have observed that job opportunities are not homogeneous across the labor market, and indeed that different kinds of job opportunities cluster together in different, stratified labor markets: secondary, subordinate primary, and independent primary.[54]

Moreover, the returns to education within each labor market are strikingly different. Buchele found, for example, that for workers in secondary labor markets (where jobs have low skills, low pay, no security, high turnover, and little chance of advancement), there was some slight benefit for each year of schooling achieved, but that they received no additional returns for any further schooling commenced after starting work. Osterman calculated that the effect of education in increasing earnings was 4 to 6 times greater for workers in primary labor markets (those characterized by job security, relatively stable employment, higher wages, and extensive linkage between a worker's successive jobs) than in secondary markets. Similar results were obtained by Gordon and by Carnoy and Rumberger. In subordinate primary labor markets (the traditional working class jobs in unionized, mass-production industries) each year of schooling gives the average worker more than a 6 percent raise, whereas in the secondary market it is only about 1.5 percent. College education at least for the first three years also paid off in higher returns; but the highest returns were for secondary schooling. Finally, in independent primary markets (professional or quasi-professional work), each year of schooling increases the average worker's pay by 10 percent. Buchele estimated that each year of schooling after college generated an extra $2000 a year in income for supervisory workers. Large returns were common at other levels of education as well, particularly college.[55]

There is convincing evidence, then, that labor markets are stratified according to the character of job opportunities available, and that rates of return to education vary dramatically between labor markets. The fact that educational equalization has not been matched by income equalization might thus be explained in terms of the disproportionate concentration of educational improvement among workers in secondary labor markets.[56] And indeed it might be argued that no amount of educational upgrading in these markets could improve income distribution, since it is not the amount of education that determines the income, but the character of the job and the labor market.

The effects of labor market stratification on income distribution are compounded by labor market segmentation, the horizontal division of labor markets by race, sex, age, and ethnicity. These divisions in the labor force segment the national labor queue into different groups, with blacks, Hispanics, and women clustered into secondary labor markets in a pattern of ethnic stratification established in the nineteenth century. Returns to education for blacks, for example, are significantly lower thatn those for whites, even within the same market.[57]

This evidence concerning education and income provides further support for the class structuration analysis described earlier, and indicates some additional lines of research that should be included in a comprehensive structural study of schooling and the economy. We now need to turn to the second and third parts of this analysis, concerning the organizational features of schooling, that are linked to the economy and the political and ideological mechanisms that link schooling and the economy.

THE ORGANIZATION OF SCHOOLING

Two kinds of explanations dominate current research on the organizational characteristics of schooling, link schools to the economy. One emphasizes organizational processes within schooling associated with the socialization of children; and the other emphasizes various "allocation" processes within schooling.

The first approach specifies some organizational feature of the school that is said to be responsible for socializing children into the normative requirements of the world of work. Thus, in the late sixties and early seventies, a number of historians, following on Robert Merton's analysis of the bureaucratic personality, argued that the formal bureaucratic structures of education were responsible for the socialization of children. These structures embodied the centralization of control and supervision, the differentiation of functions, the standardization of appointments and promotions, and the rationalization of the educational process.[58] In the most comprehensive of the studies in this area, David Tyack described the normative goals of the "administrative progressives" for children: punctuality, regularity, attention, silence, obedience, and precision. He also attempted to specify the particular bureaucratic features of schooling that he believed were responsible for inculcating these norms: class grading, uniform courses of study, standardized written examinations, competition for grades, intense activity, and strict rules of behavior.[59]

Other scholars have pursued similar approachs to the organizational links between schooling and the economy. Robert Dreeben, for example, drawing in the work of Parsons, Inkeles, and Stinchcombe, attempted to link the ecological features of the school with normative requirements of modern occupational life, universalism, specificity, achievement, and independence.[60]

Dreeben stressed that the age-graded, relatively autonomous classrooms of a specific size, composition, differentiation, scheduling, and reward structure provide students with the social experiences necessary for learning occupational norms. Schools teach students to work for the sake of grades rather than because of their personal emotional relationship with the teacher. They teach that performance and competence what you do rather than what you are are the basis of rewards and status. Because classrooms are large collectivities, children experience impersonality. Yearly promotions, staff specialization and the large size of schools systematically provide students with lessons in forming and breaking transitory relationships. This helps form the ability to distinguish between positions and persons. Schools reward merit and achievement with extrinsic rewards, grades, and promotions. And school experiences teach children to distinguish between superordination and subordination, that is, authority and obedience. As Dreeben suggests, "Schooling, insofar as it entails repeated and systematic variation of persons (teachers, pupils), situations (school grades, class size), and areas of conduct, provides a setting in which different types of subordination with their corresponding principles of legitimacy can be experienced."[61]

This is a powerful and useful model of the organization of schooling, and one whose arguments find strong support in the writings of other observers. Nevertheless, it is not without its difficulties, and requires some modification and extension. One approach that attempts to overcome some of these difficulties has been outlined by Bowles and Gintis.

Like Dreeben, Bowles and Gintis argue that the principal structural connection between school and work is the organization of schooling. But they also insist that schools systematically vary in what they call the social relations of education, and also in the normative orientations toward work that are generated. Bowles and Gintis claim that the major aspects of educational organization replicate the relationships of dominance and subordinancy that exist in the economic sphere. specifically, "the social relations of education — the relationships between administrators and teachers, teachers and students, students and students, and students and their work — replicate the hierarchical division of labor." Students, as a consequence of their experiences of the social relations of education, are socialized into the appropriate personality characteristics, habits, and modes of self-presentation required by modern bureaucratic and hierarchically organized enterprises. Most schools, Bowles and Gintis argue, teach the kind of qualities and personality traits essential for performing low- and middle-level jobs: obedience, punctuality, respect, orderly work habits, the ability to follow instruction. Schooling that differs from this pattern in its social relations are for the most part engaged in "soft socialization": the production of workers for upper-level jobs whose main requirement is the "internalization of norms." Bowles and Gintis thus argue that systematic differences exist in the social relations of education, and that these differences play an important role in the intergenerational reproduction of inequality.[62]

So far so good. But Bowles and Gintis go on to claim, rashly, that the correspondence mechanism is the only important link between work and schooling. They stress that it is form of the social relations of education that is crucial to the socialization of future workers.

> The heart of the process is to be found not in the content of the educational encounter or the process of the information transfer but in the form: the social relations of the educational encounter. These correspond closely to the social relations of dominance, subordination, and motivation in the economic sphere. Through the educational encounter, individuals are induced to accept the degree of powerlessness with which they will be faced as mature workers.[63]

This is somewhat exaggerated. Though Bowles and Gintis present evidence of a statistical correspondence between the personal attribute required for success in work and in school, the evidence is thin, at best only suggestive and certainly not conclusive. Furthermore, they neglect linking mechanisms other than the correspondence between the social relations of production and education. Educational processes other than the form of the social relations also need to be considered. Basil Bernstein, for one, has developed a provocative theory that the form of the relations between curriculum, pedagogy, and evaluation embody important ideological messages, educational "codes", that are structurally linked to production codes. Bernstein also argues that a historical shift from "collection" to "integrated" educational codes has occured because of changes in the division of labor that have affected skill requirements in modern industry.[64] A number of researchers have pointed to what Pierre Bourdeu called the "cultural capital" of schooling its normative order of symbols, rituals, knowledge, meanings, values, practices, and relationships as a crucial mechanism of cultural reproduction of class relations.[65]

Bowles and Gintis seem to have something similar in mind when they discuss "types of personal demeanor, modes of self-presentation, self-image, and social class identification." But they limit their argument to the link between "the structure of social relations of education" and "job adequacy."[66] The issue is much more complex than this, and it is simply too reductive to view the cultural capital of the school or the social relations of education as directly determining what Paul Willis calls "the subjective and cultural formation of particular kinds of labor power."[67] As Willis's own study demonstrates, many working-class students contest the official normative order of the school and attempt to create their own counter school culture. Schools may well articulate and legitimize particular values and behavior; but it by no means follows that these are internalized as specific personalities.

That students create their own school cultures is no great surprise Hollingshead, Coleman, Stinchcombe, and many others have often demonstrated this. What is new and provocative about Willis's work is that he shows schooling to be less a process of imposing meanings than a cultural contest, a process of negotiation between different orders of meaning, rooted in the clash between the cultural capital of the school and the process of (counter) cultural formation among working-class children. Working-class children are not so much socialized into the norms and behaviors compatible with the social relations of production, but that out of an effort to resist official labels and meanings and to create a counteculture of fraternity and self-worth, they create a culture that feeds them right into working class jobs -- a process of "self induction" that is as tragic as it is poignant. Schools are less institutions of socialization than arenas of cultural conflict, negotiation, and class reproduction. As well as any study yet published, Willis's book exposes the layers of cultural and symbolic mediations and contests within schools, and lays bare how economic and social pressures are transformed and lived out in schools, not simply mirrored or reproduced. It is in this sense and this sense only that we can say that schools are hegemonic institutions, and that the process of class reproduction is both an economic and a cultural phenomenon.[68]

For sociologists and ethnographers analyzing the structural linkage between schooling and work, these approaches, each of which stresses the socialization of students as the crucial link, present no methodological difficulties. This is not so for historians who have no way to demonstrate that children in past years were in fact socialized into the patterns of thought and behavior intended by educators, or, assuming that such socialization did take place, what particular organizational features of schooling were responsible. This methodological difficulty does not amount to a theoretical difficulty for socialization approaches to the relationship between work and schooling, but it does force attention to alternative (although not necessarily incompatible) approaches.

One such approach is called "allocation theory" by sociologists. Allocation theorists claim that adult success is assigned to individuals on the basis of the type and duration of schooling received, whatever they may have learned in school. Schooling is viewed as a set of instructional rules that classify and allocate individuals for positions in society. Thus schooling symbolically redefines graduates as possessing particular qualities and skills as a result of attendance at school or college, and this occurs independently of whether there have been any actual changes in competence, skill, or values.[69]

From this perspective, the importance of school organization is that it legitimates the claim of students to having had particular kinds of education. The major source of organizational diversity and change in schools is the symbolic conceptions or definitions of graduates that schools wish to project to their clients, such as employers. The linkage between schooling and work is to be found in the legitimation of particular student characteristics, rather than in any actual internalization of specific behavior or attitudes. The organization of schooling is thus approached less as a structure of socialization processes than as mechanism of stratification, a set of sorting and selecting processes that classify students and allocate or distribute them into different curriculum tracks and occupations. As Jencks suggests, "Schools serve primarily as selection and certification agencies, whose job is to measure and label people, and only secondarily as socialization agencies, whose job is to change people."[70]

Both the socialization and the allocation models of the organizational processes linking schooling to the economy contain much of value. The question is not either-or; both are required, for both explain different, but interconnected, facets of the relationship. Allocation models stress the connection between labor markets and the stratification and labelling processes within the school. Socialization models stress in various ways, the connection between the school itself and the labor process. Of course, the relative importance of the two mechanisms will often vary at different times and in different labor markets. But this is a matter of empirical investigation, not of a priori theorizing.

THE MECHANISMS LINKING SCHOOLING AND THE ECONOMY

It is one thing to delineate the structural linkage between schooling and work, and entirely another to determine the mechanism that creates and sustains the links. For neoclassical economists and those sociologists and others influenced by them, economic and educational change is mediated by mechanisms of the human capital market. In the neoclassical model, educational change, whether organizational innovation or increased school attendence, is viewed as a market-based response to changes in the demand for skilled labor that flow from technological change and occupational specialization.

The first difficulty faced by this theory can easily be anticipated: its assumptions it about the demand side of the process, as we have seen, are simply erroneous. But this difficulty in itself is not sufficient to destroy the argument that market processes govern economic and social change. A much greater difficulty for market-based explanations is the supply side process. By and large, people do not send their children, to school simply out of a conviction that education is economically beneficial, although certainly this is an important consideration.

Even more seriously, organizational innovation in schools is not just a market response to economic change. In a very fundamental sense, educational changes are also the product of cultural, ideological, and political conflicts in the society. The major reforms of the Progressive Era - for example, compulsory education, differentiated education, the centralization of educational administration, child entered pedagogies - were not simply "economic" responses to "economic' changes (and certainly not to the economic changes stipulated by modernization theory) but also political responses to events that in part were political in nature. Schools, moreover, like other large organizations, encompass "competitive," "incompatible", or "contradictory" processes and structures. There is tension between the principles for recruiting teachers, students, and administrators; between vocational goals and citizenship training; between the need to motivate and the need to discipline; and between the competing authority of teachers, administrators, interest groups, and parents.[71] Organizational development is more a political process, and less the outcome of some bureaucratic imperative.[72]

It is for these reasons that schooling ought not to be approached as an economic institution operating in a competitive market. Schools, function, it seems, to some extent independent of the market system. They are not an economic institution in the same sense as, say, a firm, a bank, or a labor market. The principal reason for this is that the structural and institutional links between the economy and schooling contain political and ideological mechanisms not under business control or some other direct economic influence. Schooling does not, therefore, respond to economic changes in any simple fashion, and certainly not automatically, as modernization theory predicts.

Thus, notions of "functional fit" and "invisible hand" are inappropriate for describing the relationship between schooling and the economy. "The independent internal dynamics of the two systems (work and schooling)," Bowles and Gintis point out, "present the ever present possibility of a significant mismatch arising between the economy and education."[73] Consequently, they argue, important "contradictions" or noncorrespondences between the economy and schooling frequently develop.

To disqualify functionalist logic as a historical explanation, however, is not to deny that important functional relations exist between work and schooling. Though a particular configuration of workplaces and organizational innovations may be "functional" for capitalism, the configuration is nevertheless contingent on various political and ideological processes. It is all too easy, as Ira Katznelson suggests, "to confuse the difference between the claim that capitalism and schooling have a functional relationship with the claim that schooling was the required institution to perform a given function for the reproduction of the system."[74] There are few better reasons why the relationship between the economy and schooling should studied historically.

If the human captial market does not govern the relationship between economic and social change, what kinds of political or ideological processes do? Interest group pluralism? Class determinism? Class conflict? Ideological hegemony? Professionalism? The general theoretical literature on the form of political processes in America is extensive and unsettled. This larger debate is reflected in writings on educational politics.[75]

For a variety of reasons, which I have outlined elsewhere, most current analyses of educational change are unsatisfactory.[76] The most promising approach a model proposed by Bowles and Gintis. On a day-to-day basis, they argue, educational politics reflect a pluralist politics of interest-group conflicts and ethnocultural antagonisms, but within an economic and political framework shaped by the effects of capital accummulation. Occasionally, when the schools appear inadequate to employers or to reformers or when social disorder threatens, the political process changes. A politics of pluralist accommodation is replaced by a politics of structural change, as reformers or educational elites try to realign the school with the needs of the economy or to resolve pressing social and political conflicts. "The demand for vocational education, during the Progressive Era, for example, was a political and ideological response, primarily of efficiency-minded educators and business groups, to the transformation of the labor process and the development of segmented labor markets. The outcome of this process was a triumph for the advocates of vocational and differentiated educator. It was thus a political triumph for those advocating a close calibration of public schooling with the labor process and the labor market, or in the terms of class analysis, the structuration of American education around the "class principle".[77]

Such a model of educational politics is simple and elegant. With some modification, notably the inclusion of ideological processes as a form of class conflict rather than as a reflection of economic interest, it would be a cogent and accurate explanation of educational politics in America. There is no omnipotent invisible hand of the human capital kind, nor a "functional fit" that Parsonians imagine, nor a "class determinism" that social-control historians worry about. There are only concrete political struggles, sometimes assuming a class character, sometimes not, between groups of people with differenct goals and interests reacting to different circumstances.

These political processes that link schooling to the economy are, of course, also linked to the larger political processes of American history. It is impossible to analyze educational politics adequately without locating them in the historical context of industrial capitalism. Two examples illustrate this. One was the tension created by the development of industrial capitalism between the promise of republican independence and the reality of wage employment and economic dependency. This tension was exacerbated by the profound impact of industrialization on American opportunity, structures, an event which upset the old equation of hard work and economic independence. The result was the redefinition of economic success, from the old republican idea or yeoman and entrepreneurial independence, an ideology of status mobility. Not only did the meaning of success change, but also the means, from the virtues of frugality and industry to the personality traits of sociability, charm, and will power. The visions of Franklin, Jefferson, and Paine gave way to the dicta of Horatio Alger and Russell Conwell, - and these in turn to the pat formulas of Norman Vincent Peale and Dale Carnegie.[78]

A second example is a series of tensions at the heart of liberal social theory: tensions between possessive individualism and the legacy of an eighteenth century intellectual tradition based on notions of irressistable compassion, sentiment, and sympathy; between self interest and republican virtue; between individual achievement and social equality; between utility and morality.[79] Several offspring of these tensions are crucial to an adequate understanding of the public philosophy of American education: the transmutation of avarice from a vice into a virtue; the redefinition of equality into equality of opportunity; the reduction of equality of opportunity into equality of educational opportunity; the metamorphisis of democracy into meritocracy; and the birth of "contest" mobility and "expanding universalism."*

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*Yet, despite the fact that meritocratic ideology has been the single most important source of the legitimation of inequality in America, no systematic study has yet appeared on meritocratic ideology or on the rise of education as the principal institutional means of legitimating social authority and inequality in America. For studies of related issues, see S. Haber, Efficiency and Uplift (Chicago: 1964); T. Haskell, The Emergence of Professional Social Science: The American Social Science Association and the Nineteenth Century Crisis of Authority (Urbaba: 1976); B. Bledstein, The Culture of Professionalism (New York: 1976); Loren Baritz, Servants of Power (Middletown, Conn.: 1961).

CONCLUSION

In this essay I have argued that the role of education in America has been shaped by the forces of industrial capitalism as part of a broad transformation of American society. This transformation has involved the creation of a market in labor; radical changes in work, opportunity structures, and mobility paths; the restless and ceaseless movement of people; the stratification of labor markets; new ideological formations; and new patterns of institutional alignments. As a consequence, new structural links have been forged between schooling and work. At the same time, schooling increasingly mediated the relationship between family background and occupational attainment.

It is important to emphasize that the connections between schooling, the labor process, and the labor market developed only over many decades, and to the accompaniment of considerable political conflict. For many years after the first appearance of capitalism as a coherent cultural configuration, schooling was not linked in any structural sense to the labor process or the labor market. For much of the nineteenth century, schooling grew because of the particular ideological commitments of Americans, and it served largely political and ideological functions. It was not until the late nineteenth century and the Progressive Era that schooling was linked structurally to the economy. The key to this linkage was the continued transformation of the labor process (the shift to real subordination), the development of stratified labor markets, and the introduction of vocational education, which have been the focus of this paper.

Of course, the structuration of education and capitalism includes far more than the creation of structural links between work and schooling.

It also included the "modernization" of inequality and incompetence, the articulation of ideologies of legitimation, the growing significance of "cultural capital" and processes of cultural reproduction, and the growing importance of such institutions as vocational guidance, employment agencies, private trade, technical, and business schools, colleges, and professional schools in the transition from school to work. I have not attempted to analyze these issues, and nor have I attempted to discuss how education and the mechanisms that link schooling to the family and to work came to play a major role in status attainment. These are all aspects of the structuration of schooling that a comprehensive account of the impact of capitalism on American education could hardly neglect.

Finally, I have not attempted to document the recurrent tensions in American history between the political purposes of schooling, inherited from the Revolution and the common-school reform movement, and the unremitting pressure of the market conceptions of schooling. This conception has led to the demand of business groups for a certain training and differentiation of workers; the effort by parents from all classes, creeds, and races to use education as a means of improving their children's chances in the labor market; and the recent career education movement, which has sought to inculcate the work ethic in children and to provide them with entry-level skills.

These are all rational and intelligible responses to the market economy. But as some educators recognized during the Progressive Era, these developments also threatened the primary political purposes of schooling: the development of republican citizens. The Progressive period was in fact the second time when the great ideological battle of American education was fought out between these two principles of social and educational organization. By 1920, however, vocationalism had triumphed. There were compromises, however, the chief of which was the abandonment of the effort to establish dual systems of secondary education in favor of the comprehensive high school. Of course, this compromise has been avoided in higher education, where a highly stratified system has appeared, helped in no small measure by the Carnegie Commission on Higher Education. If the triumph of the market in politics, as in the economy, left nothing but the pursuit of self-interest; if in culture it left nothing but narcissism and the psychedelic bazaar; if in human relations nothing but the cash nexus, in education it has increasingly left nothing but vocationalism. It is the forging of new institutional alignments between the economy and schooling that a class analysis of American education can make intelligible.

ENDNOTES

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4. Robert Dreeben, On What is Learned in School (Reading, Mass., 1968), Talcott Parsons, "The School Class as a Social System," Harvard Educational Review, 29 (1959): #297-318.

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7. North, "Capital," pp. 277.

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9. Trow, "Transformation," pp. 438-39.

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16. Folger and Nam, Education.

17. Berg, Collins, "Functional"; Dorothy K. Newman et al., Protest , Politics, and Prosperity (New York, 1978), ch. 3.

18. Cited in Braverman, Monopoly Capital, p. 220.

19. Kingsley Davis and William E. Moore, "Some Principles of Stratification," American Sociological Review, 10 (1945): 242-49; Talcott Parsons, "Equality and Inequality in Modern Society, or Social Stratification Revisited," Sociological Inquiry, 40 (1970); Richard Hernstein, IQ in the Meritocracy (Boston, 1971); W. Lloyd, Robert Warner, J. Havinghurt, and Martin B. Loeb, Who Shall Be Educated? (Chicago, 1944).

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in the recent past educational achievement is strongly dependent on social background, even for people of similar childhood IQ --indeed, they conclude that contrary to the hypothesis of expanding universalism, "the number of years of school attained by a child depends upon family background as much in the recent period as it did fifty years ago." On the other hand, Blau, Duncan, Sewell, and Hauser argue that socio-economic factors by themselves do not explain very much of the variance in educational achievement, and that ability or intelligence is probably the primary determinant of educational attainment. See Michael Katz and Ian Davey, "Youth and Early Industrialization in a Canadian City," in John Demos and Sarane S. Boocock, eds., Turning Points (Chicago, 1978), p. 103; Richard Jensen and Mark Freidberger, Education and Social Structure: An Historical Study of Iowa, 1870-1930 (Chicago, 1976); Samuel Bowles and Herbert Gintis, Schooling in Capitalist America (New York, 1976), pp. 30-33; Blau and Duncan, American Occupation Structure, pp. 401-403; William H. Sewell and Robert M. Hauser, "Causes and Consequences of Higher Education: Models of the Status Attainment Process," in William H. Sewell, Robert M. Hauser, and David Featherman, eds., Schooling and Achievement in American Society (New York, 1976), ch. 1.

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Working Paper No. 7

The Growth of Public Education in Nineteenth Century Philadelphia: Aggregate Enrollments, Attendance and Attainment

David Hogan

I. Introduction

II. Enrollments

III. Enrollments by Level of Schooling

IV. The Intensification of Schooling

V. The Eductional Stock

VI. Educational Attainment

VII. Explanations that Don't Explain

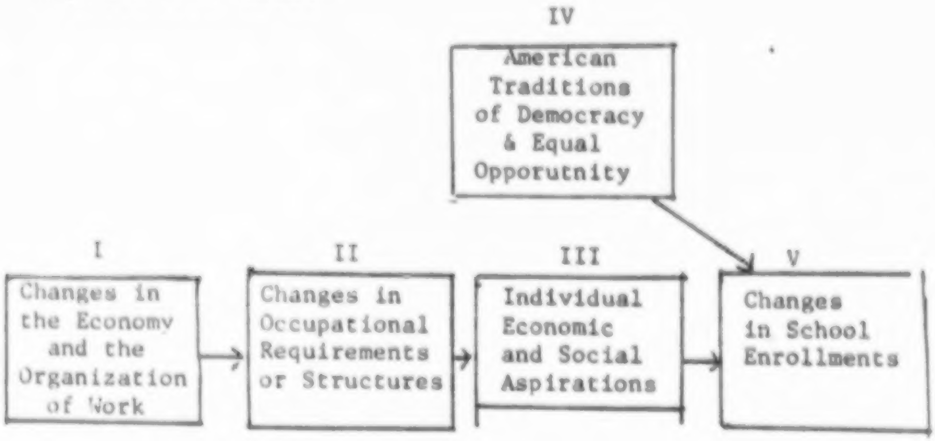
VIII. Conclusion

INTRODUCTION

In this working paper I wish to accomplish two objectives: describe the pattern of the growth of enrollments and the intensificaiton of schooling in Philadelphia between 1820 and 1930, and attempt to demonstrate in a preliminary fashion what doesn't explain these patterns. What I think does explain them will be discussed in a subsequent working paper.

Of the principal measures of the expansion of schooling currently used, two are particularly relevant. The first measures the expansion of enrollments, both absolutely and as a proportion of the population at risk, the 0-19 age cohort, the second, what Kaestle & Vinovskis have termed the "intensification" of schooling-the increase in the number of days of schooling per year per capita of all persons under 20. The expansion of enrollments has been widely discussed, and the intensification of schooling no doubt will be.

Until a few years ago explanations of the growth of school enrollments almost invariably spoke the language of modernization theory - or at least employed its leading concepts. Martin Trow, for example, explained the rise of mass secondary and tertiary education as a consequence of two related processes. He argued, first, that "the growth of the secondary school system after 1870 was in large part a response to the pull of the economy for a mass of white collar employees with more than an elementary education." This in turn was a consequence of "tremendous changes" in "the economy", "the organization of work", and especially of changes in the "occupational structure". He added, however, that "changes in the occupational structures do not provide the whole explanation of the extraordinary growth of secondary and higher education in the United States." Rather, "the occupational changes ahve raised the educational aspirations of large parts of the American population, and the educational system has been responsive to these larger aspirations". In addition, he emphasized that America's tradition of "democracy" and "equality of opportunity" had exerted a subsidiary but still important influence. Schematically, his model might be represented thus:


IV
American Traditions of Democracy & Equal Opporutnity
I
Changes in the Economy and the Organization of Work
II
Changes in Occupational Requirements or Structures
III
Individual Economic and Social Aspirations
V
Changes in School Enrollments

Trow's model of the expansion of schooling is far and away the most impressive theory of the expansion of school enrollments yet to come from the pen of a modernization theorist. In insisting upon the significance of individual aspirations and economic and political ideology he adds a dimension rarely found in modernization theories. Most such models only bother with variables in boxes I, II and II, emphasizing the link between occupational requirements and school enrollments. Thus Douglas C. North:

> The sustained expansion of manufacturing. . .requires a large investment in human capital. While the operatives in the factory itself may not be required to possess substantial skills, the spread of manufacturing with expansion in the size of the market leads to vertical disintegration and the development of a host of highly trained and skilled ancillary and complementary fucntions. I am thinking not only of the development of specialized capital goods industries and wholesale and retail marketing facilities, but equally of the wide variety of professional services which are required.

H. J. Habbakuk is even more emphatic about the relationship between industrialization and skills. Habbakuk contends that machines and skilled labor are complements in production, not alternatives, because skilled workers were required to build the machines. In all probability, he argued, "the manufacture and use of the more capital intensive technique required more skilled to unskilled labor than the labor intensive." (8)

Most modernization explanations of the rise in school enrollments are of this kind: industrialization created a demand, in the first instance, for skilled labor, and in the second, for an educated labor force. Such arguments are invariably highly functionalist in character: changes in the pattern of employment or in the structure of the economy "require" a more highly educated labor force. Yet there are an imposing number of theoretical and empirical problems confronting such an explanation of the expansion of schooling, whether of enrollments or the intensification of schooling. In response, a variety of alternative theoretical perspectives have been proposed by historians, sociologists and economists, although not all of these address the issue of expanding enrollments directly or discriminate in their explanations between the various aspects of the expansion of schooling. Still, at least at an indirect level most do address the issue of expanding enrollments, and imply certain conclusions about the intensification of schooling.

The first such perspective is essentially a cluster - or even a coalition - of loosely connected "revisionist" perspectives with related but slightly different emphases. Some emphasize that the expansion of public schooling was a consequence of elite fears of urban and social disorder; others emphasize the desire of employers and educators to impose a capitalist work discipline upon the future labor force at a time when the organization of work and the character of the skills required or demanded of labor was undegoing profound qualitative changes; yet others emphasize the response of elites to the spread of wage labor and class conflict. None of these positions are mutually exclusive; in most cases, individual historians sympathic to one of these perspectives usually emphasize several issues. (Katz, Tyack, Schultz, Lazerson, Hogan, Violas, Bowles & Gintis).

A third model has been proposed by Randall Collins. Collins denies that schooling and work are linked via skills, whether cognitive or affective. Instead, drawing upon a Weberian theory of status competition, he proposes that competition and conflict between status groups generates increased demand for schooling that has little or no relationship to skill requirements in the economy. People desire education because they desire status, and they believe that education is the means of attaining it. Low and middle status groups will thus seek to raise their relative position in the competition for status. And since eductional qualdifications both symbolize high status and are instrumentally important in achieving such status, these low and middle status groups attempt to achieve more educational credentials. But, of course, to the extent that such groups are able to increase the levels of their educational qualifications -- for example, from five to seven years -- high status groups seek to preserve their relatively more privileged position. High status groups thus raise their educational qualifications in an effort to maintain their position. In response, low status groups attempt again to close the gap. And so on in a continuous spiral.

The effect of this spiral, according to Collins, is to exert a continuous upward pressure on the supply of educated labor, independently of changes in the organization of work or skill requirements. Two conclusions follow. The first that this continually increasingly supply of labor enables employers to upgrade the educational requirements of jobs that to all intents and purposes have not changed in their objective skill requirements. Hence the credentials gap noted by Berg. Second, Collins model replaces occupational requirements as the engine of increased enrollments with status group competition and the demand and supply of educational credentials. Changes in educational requirements and the occupational distribution of educated labor do not reflect changes in occupational or skill requirements, as modernization theory suggests, but something quite different as a result of status group competition. In essence, changes in educational requirements and the occupational distribution of educated labor reflect rather than cause changes in the pattern of educational achievement.

Collins model of the expansion of educational achievement, although provocative and exciting theoreticaly, remains largely untested empirically. But where Collins is long on theory and short on systematic empirical testing, the reverse is true of Kaestle & Vinovkis' study of 19th century Massachusetts. In a series of regression analyses of school enrollments, daily attendance, length of the school year and the amount of schooling per capita annum for 19th century Massachusetts,they argue that (1) the common school reform movement of the 1830's & 1840's had little or no impact upon the level of attendance but effected rather a change in the organization and governance of public education and a shift in the structure of enrollments away from private and toward public schools; (2) that the relatively high level of enrollments from the 1790's through to 1840 was a consequence not of urbanization, industrialization or increased commercial activity, but of Republican and Protestant notions of an educated and pious citizenry, the increased provision of schooling for girls, and the decentralization of the location and control of the schools; (3) that the level and pattern of school enrollments after 1840 was not appreciably associated with population size, manufacturing activity, commercial activity, wealth, or the percentage of Catholics in a community; they were, however, moderately associated with the number of church seats and pauper expenses and strongly related in a negative direction to population density and percentage of foreign born in a community; and (4) that the various measures of the intensification of schooling that they employ - average daily attendance, length of school year, and amount of schooling per child per annum - were strongly and positively related to population density and commercial activity and negatively but strongly related to percentage of the population that was foreign born. On the basis of these findings Kaestle and Vinovskis reject any suggestion that school enrollments are linked in any direct way with the expansion of wage labor, factory production or the economy in general They do accept, however, a closer and more direct relationship between the intensification of schooling, bureacratization and systematzation on the one hand and the "increasing attention educators gave to character formation, regularity and punctuality". (44)

With respect to the intensification of schooling then Kaestle & Vinovskis do accept a loose link between schooling and the culture of an ascendent capitalism, although with respect to the expansion of school enrollments after 1840 they insist upon a form of causal indeterminism and historical agnosticism: it is if they assumed that to demonstrate what the expansion of school enrollments is NOT linked to is an adequate form of historical explanation. As a consequence, they simply provide no explanation at all for the expansion of school enrollments from midcentury on. Much the same is true of Lawrence Cremin's examination of school enrollments from the late 18th century to the 1870's. Like kaestle & Vinovskis he emphasizes "that the popularization of schooling antedated the public school movement" but that "with the advance of the public school movement, enrollments rose, especially at the primary level, though some of the gains in public school enrollments were more apparent that real insofar as they involved the shift of students from private to public schools rather than the recruitment of new students who might not have attended school at all." (178) But Cremin provides not a sentence in 521 pages to explain why parents sent their children to school, before, during and after the common school reform movement. Seemingly, explaining changes in educational behavior has not the slighest interest for him.

Happily, others are less shy or myopic. In an aggregate state level analysis of enrollments in the North & West from 1870 to 1840 Meyer & Tyack suggest the expansion of school enrollments was linked to what they call "natioln-buidling". In a series of regression analyses in which they included measures of urbanization, political party affiliation, immigration, evangelical Protestanism, and percentage of the population Catholic, they conclude

> "that the expansion of education in the 19th century North & West contained elements of evangelical Protestism, freeholder capitalism, and an individualistic conception of the polity - phenomena we have grouped under the rubric of nation building. They lend support

> to three general ideas: First, urbanization and industrialization were not prerequisites for the development of mass public education; on the contrary, the society of the rural North & West may have produced higher enrollments than did the towns and cities. Second, the nation building movement, for which we have used numbers of evangelical Protestants & Republican party dominance as indicators, did seem to have some effect on educational enrollments...Third, our statistical analysis suggests important changes in the control, character and direction of American education at the turn of the 20th century... "(p 607).

These then are the principle theoretical perspectives from which current explanations of the expansion of schooling have been derived. Not all of the perspectives address the issue of expanding enrollments equally directly, and only Kaestle & Vinovskis have discriminated between expanding enrollments and the intensification of schooling. Obviously then alternative perspectives need to be tested empirically, and tested empirically in a systematic way. But there are also additional indices of the expansion of schooling that need to be considered. Of these changes in the educational stock and levels of educational attainment - respectively, the total amount of schooling at any one point in time and the amount of education received by a particular age cohort - seem particularly significant. Yet for a variety of methodological reasons no research has yet been published on these indices. In the pages that follow an attempt is made to develop such measures and relate them directly to larger indices of social change in 19th century Philadelphia.

II. ENROLLMENTS

Between 1818, the year the First School District of Pennsylvania was created, and 1920, enrollments in Philadelphia's pulic schools increased from 2,845 to 233,214, an increase of 8,097.3%. At the same time, Philadelphia's population increased form aproximately 135,000 to 1,823,779, an increase of 1,250.9%, large in its own terms, but dwarfed by the magnitude of the increse in public school enrollment over the same time period.

Breakdowns of the expansion of enrollments reveal, however, a very uneven pattern of growth. Between 1818 and 1836, for example, the year free public schooling was introduced into Philadelphia, enrollments increased by 150.5%, while in the four years between 1836 and 1840 enrollments increased 225.4%. Between 1836 and 1920 enrollments increased 2264.1% but between 1837 and 1900 only 581.9%. A closer examination of the expansion of enrollments thus seems warranted.

Table One

Percentage Increase	1818 - 1836	=	150.5%
"	1818 - 1840	=	715.5%
"	1818 - 1920	=	8,097.3%
"	1836 - 1840	=	225.4%
"	1836 - 1920	=	2264.1% (?)
"	1837 - 1900	=	581.9%
"	1850 - 1900	=	215.1%
"	1870 - 1920	=	184.9%
"	1900 - 1920	=	53.9%

1818-1840

The figures given in Table 2 are year-end annual enrollments derived from the annual reports of the Philadelphia Board of Education. They are not annual enrollments, but enrollments on a particular day, usually the last day of December or the last day of June. This is particularly fortuitious, since it makes possible direct comparisons with census data that is also collected on a particular day; if the Philadelphia Board of Education had simply enumerated annual enrollments, this would not have been possible without converting the annual enrollments into year end enrollments (see Kaestle & Vinovskis 13-14, 28-30).

The most striking feature of the figures in Table 2 is the extraordinary explosion of enrollment figures after passage of the 1836 Act, establishing a system of free and common schools for the children of Pennsylvania. In one year alone the figures jumped from 7,127 to 16,761, an increase of 135.1%. Between 1836 and 1840 enrollments grew 225.4%. Unfortunately, given the absence of systematic let alone reliable data on total enrollments in the city - that is, enrollments in both public and private schools - it is impossible to determine with any finality whether the increased enrollments were due to an increase overall in the number of children attending school (i.e., in total enrollment), or whether they reflect a shift from private to public schools. In their study of 19th century Massachusetts, Kaestle & Vinovskis report that like Fishlow they found relatively high levels of school enrollment between the end of the 18th century and the era of the common school reform movement. They disagree, however, with Fishlow in insisting that the common school reform movement did have some impact on school enrollment in Massachusetts, not so much on the aggregate total, but on its pattern. The principal effect of the common school reform movement upon school enrollments in Massachusetts, they argue, was to shift enrollments from private to public schools (Kaestle & Vinovskis 4-5, 10-22, 33-37).

There is some data for Phladelphia, in no sense definitive, which suggests that the acts of 1834-1836 had a similar effect in Philadelphia. The annual reports of the Board of Managers of the Philadelphia Society for the Establishment and Support of Charity Schools indicate a sudden and dramatic decrease in the enrollments of its schools after the passage of the 1826 Act. In 1833 the Society enrolled 510 students; in 1834 483; in 1835 447; in 1836 however the enrollment more than halved to 201. In 1837 enrollment increased by 1 to 202, where it stayed for the next year. In 1839 enrollments increased to 211, but in 1840 again dropped, this time to 200. The Society itself recognized that the course of the decline was obvious. In 1834 it reported that "Extensive public provisions being now made for the free instruction of indigent youth, this society has of course lost its novelty". (AR, 1834, p. 4) Two years later the society, admitting that the new school law had provided "a system of common schools" for "that class of children hitherto dependent upon our own and a few kindred institutions", decided to eliminate those children who had·already acquired a rudimentary education (Minutes Book, October 7, 1836).

TABLE TWO

NUMBER OF STUDENTS, PERCENTAGE INCREASE, 1818-1840

Year	Students Boys	Students Girls	Unknown	Total	Percentage Increase	Percentage Boys	Percentage Girls
1818	1507	1338		2345		52.9	47.1
1819	1677	1591		3268	14.9	51.3	48.7
1820	2594	2775		5369	64.2	48.3	51.7
1821	1624	1345		2969	-44.7	54.6	45.4
1822	1528	1219		2747	- 7.4	55.6	44.4
1823	1558	1148		2706	- 1.4	57.5	42.5
1824	1707	1261		2968	9.6	57.5	42.5
1825	1894	1613		3507	18.1	54.0	46.0
1826	2189	1803		3992	13.8	54.8	45.2
1827	2141	1762		3903	- 2.2	54.8	45.2
1828	2301	1991		4297	10.0	53.6	46.4
1829	2301	2002		4303	0.1	53.4	46.6
1830	2483	2174		4657	8.2	53.3	46.7
1831	2397	2205		4602	- 1.1	52.0	48.0
1832	2567	2230		4797a,b	4.2	53.5	46.5
1833	3713	3054		6767c	41.0	54.8	45.2
1834	4558	3786		8344d	23.3	54.6	45.4
1835	4350	3696		8046e	- 3.5	54.0	46.0
1836	3868	3259		7127f	- 11.4	54.2	45.8
1837	3712	3315	9734	16761g	135.1		
1838	3965	3501	11328	18794g	12.1		
1839	4978	4472	12043	21968g	16.8		
1840	5384	4808	13000	23192g	5.5		

OVERALL INCREASES:

1818 - 1840	715.1
1818 - 1836	150.5
1836 - 1840	225.4

Table Two (cont'd)

a includes 65 in infant school
b does not include 961 (?) educated at public expense in "common" schools
c includes 180 in infant schools
d includes 1433 in infant schools
e includes 1230 in infant schools
f includes 1214 in infant schools and 2500 in 26 primary schools
g net of outer section school students
i includes students in outer sections

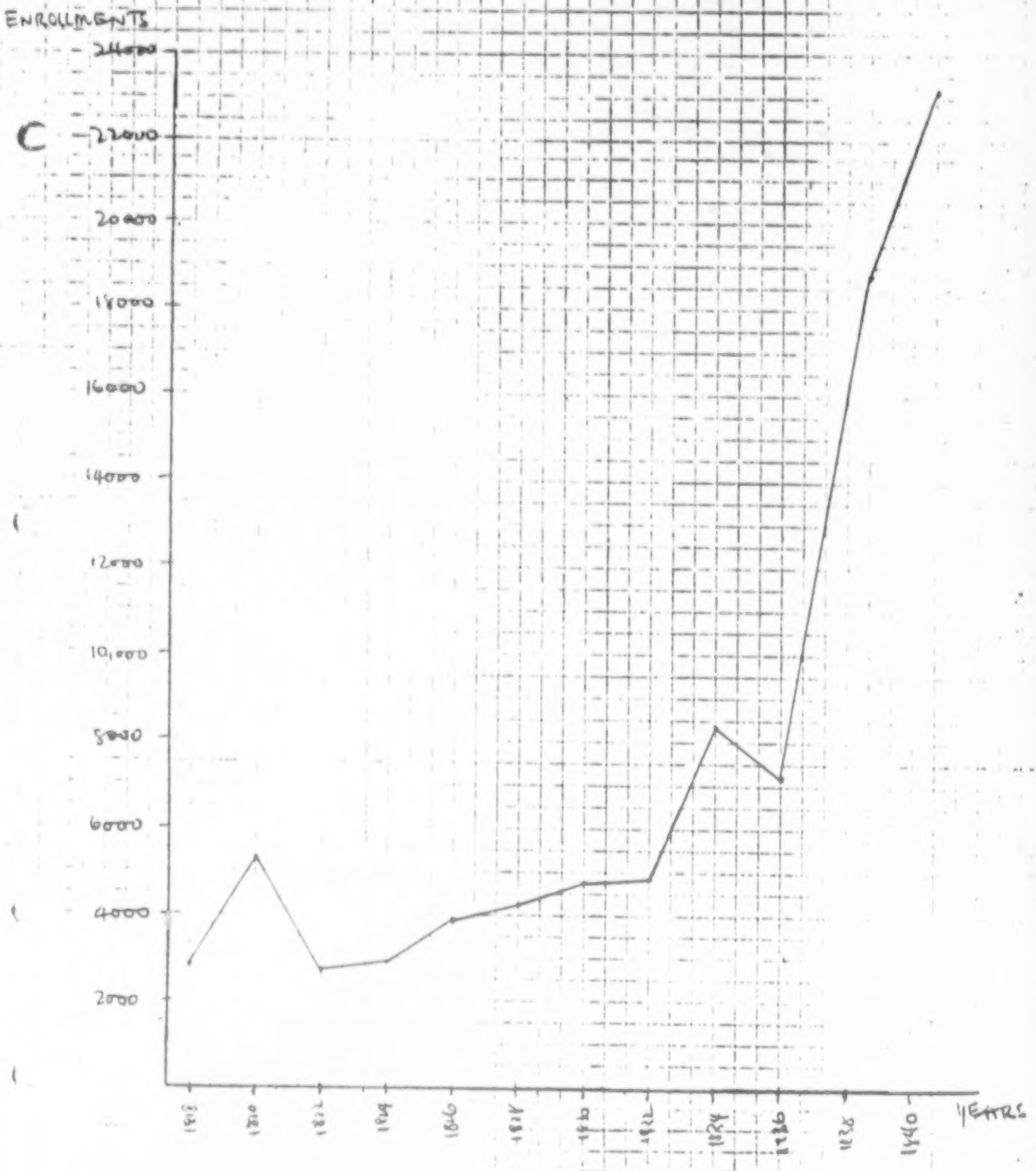
The history of enrollments at the Society's schools can hardly be considered definitive of the pattern of private enrollmetns generally during the 1830's, but in the absence of further data, it certainly suggets at least the possibility that part of the expansion of public school enrollment after 1836 was at the expense of enrollments in the private sector. We do not know at the moment how responsive enrollments at private academies were to the establishment of public schools, but it seems unlikely that they were any less responsive. It is a topic that requires, obviously, further investigation.

1836-1920

Between 1836 and 1920 year-end enrollments at Philadelphia's public schools increased from 7127 to 233,214, an increase of 2,264.1%. Between 1836 and 1880 enrollments increased 1380.8%; between 1836 & 1900, 2025.0%; between 1850 and 1900, 215.1%; between 1870 & 1920, 184.9%; between 1900 & 1920, 53.9%. Although enrollments in subsequent time period did not jump as dramatically as they did between 1836 & 1840 (some 225.4% in four years), nevertheless the continued high rates of increase between 1840 and 1920 suggest a picture of a continuously expanding public enrollments. (see Table Three, Graphs Two & Three). In only two decades - between 1880 and 1890, and between 1900 and 1910 - did the rate of increase drop below 28%.

A closer look at the pattern of growth of enrollments reveals, however, that toward the end of the 19th century a veritable

GRAPH ONE: PUBLIC SCHOOL ENROLLMENT
1818 - 1840.



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explosion took place in enrollments. The dimensions of this increase are obscured by a singular concern with absolute percentage increases: from this perspective, the "take off" in enrollments occured between 1837 and 1850. For its time, the increases were indeed remarkable, but comparatively speaking, perhaps not as impressive as the increases that took place late in the century. The large absolute percentage increases of the 1830's & 1840's were in part a mathematical artifact of the small base number involved. When the absolute percentage increases are recomputed as relative percentage changes - for example, by expressing the change in enrollmetns as a percentage of the 1920 figure, as in the last column of Table 3 - a different pictureemerges. The years between 1836 and 1850 still look remarkably repsectable, but from the perspective of the growth of enrollments as a whole, the decades between 1890-1900 and 1910 and 1920 really stand out. In the 70 years leading up to 1890 the level of enrollments only reached 49% of the 1920 level, but in the 30 years following 1890 enrollments doubled, even allowing for thelarge base in 1890. If there was a "take off" point in school enrollments, it was clearly the decade of the 1890's.

The figures I have presented thus far are for public school enrollments; they therefore tell us little by themselves about the experience of the school going age cohort, the 0-19 age cohort. To place the figures for public school enrollment in their appropriate context, data on the school enrollment experiences of the 0-19 age cohort in general are required.

TABLE THREE

PUBLIC SCHOOL ENROLLMENTS

1820-1920

Year	Year End Enrollment			Percentage		Percentage Increase	Percentage of 1920 Figure
	Males	Females	Total	Male	Female		
1820	2594	2775	5369	48.3	51.7	-----	2.3
1830	2483	2174	4657	53.3	46.7	-13.2	1.9
1840	5348	4808	23192*	52.6	47.4	398.0	9.9
1850-51	24508	23548	48056	50.9	49.1	107.2	20.6
1860	32486	31044	63530	51.1	48.9	32.1	27.2
1870	41040	40814	81854	50.1	49.9	28.8	35.0
1880	52356	53185	105541	49.6	50.4	28.9	45.2
1890	56001	58305	114306	48.9	51.1	8.3	49.0
1900	75084	76371	151455	49.5	50.5	32.4	64.9
1910	83648	84845	168493	49.6	50.4	11.2	72.2
1920	109755	123459	233214	47.0	53.0	38.4	100.0

---

* Sex of approximately 13000 students not indicated.

Table Four

NUMBER OF CHILDREN, 0-19, 5-14, AND NUMBER OF CHILDREN AT WORK, AT SCHOOL, AT PUBLIC SCHOOL, AT PRIVATE SCHOOL, 1820-1920

Year	Number of Children 0-19	Number of Children 5-14	Number of Children at Work	Number of Children at School (0-19)	Number of Children in Public Schools (0-19)	Number of Children in Private, Parochial & Denom. Schools (0-19)
1820	66,446[a]	33,220[a]	---			
1830	87,372[b]	40,350[b]	---	---	4,657	---
1840	113,206[b]	50,064[b]	---	25,109[f]	23,192	1917 (220 parochial)
1850	185,074	89,326	---	53,645	48,052[e]	5593[g] (243 parochial)
1860	225,432	121,375	---	---	63,530	---
1867	163,843[c]		20,902	101,081	76,419	24,662[i]
1870	267,199	140,632	7,864	108,751	81,075	27,676
1880	325,466	162,734	15,240	(no data)	105,631	
1890	392,023	188,098		147,744	114,317	33,427[n]
1900	476,198	235,295	26,455	186,660	151,455	35,303[n]
1910	560,500	266,038	21,098	237,815	162,383[p]	75,432[n]
1911 (6-15)		282,596 (6-15)	11,402	259,095	169,703	89,892[n]
1920	643,171	321,197	10,947	311,083[k]	226,130	84,958[n]
1920 School Census	329,438	(6-15 incl)	11,941[d]	296,573[k]	215,862	80,711[u]

Table Four

(a) Estimates of the number of children are based on Census statistics and projections based on those statistics. The projections are based on the assumptions that each age cohort (by year) is roughly equal in size; by dividing the number of children by the number of age cohorts for which data is available, it is possible to estimate the number of children for each age cohort for which data is not available.

(b) White only.

(c) Six-eighteen cohort only

(d) 20,924 children were not at school or at work.

(e) Census gives 40,896 at public school.

(f) Philadelphia County.

(g) Census figure.

(h) 1867 Annual Report 43-44. Since the School Census total is probably around 15% below the real figure added 15% to the 142,517 reported in the school census. The figures for children at school are probably reasonably accurate; the largest errors were probably made in reporting the number of children not at school and not at work, and working. The School Census reported 20,534 children 6-18 not in school and not at work. On the errors of school census, see Kaestle and Vinovskis 292· Bixler 32.

(i) Includes 12,799 students in private schools, and 11,863 in parochial and denominational schools.

(k) Based on 1920 census figures for 0-17 at school, plus 2/3 of the 18-20 estimate.

(l) Since the numerator includes all children 0-19 in public school, whereas the denominator includes only children 5-14, it is not possible to make this estimate.

(m) Projection, based on Census data for 10-14 age cohort.

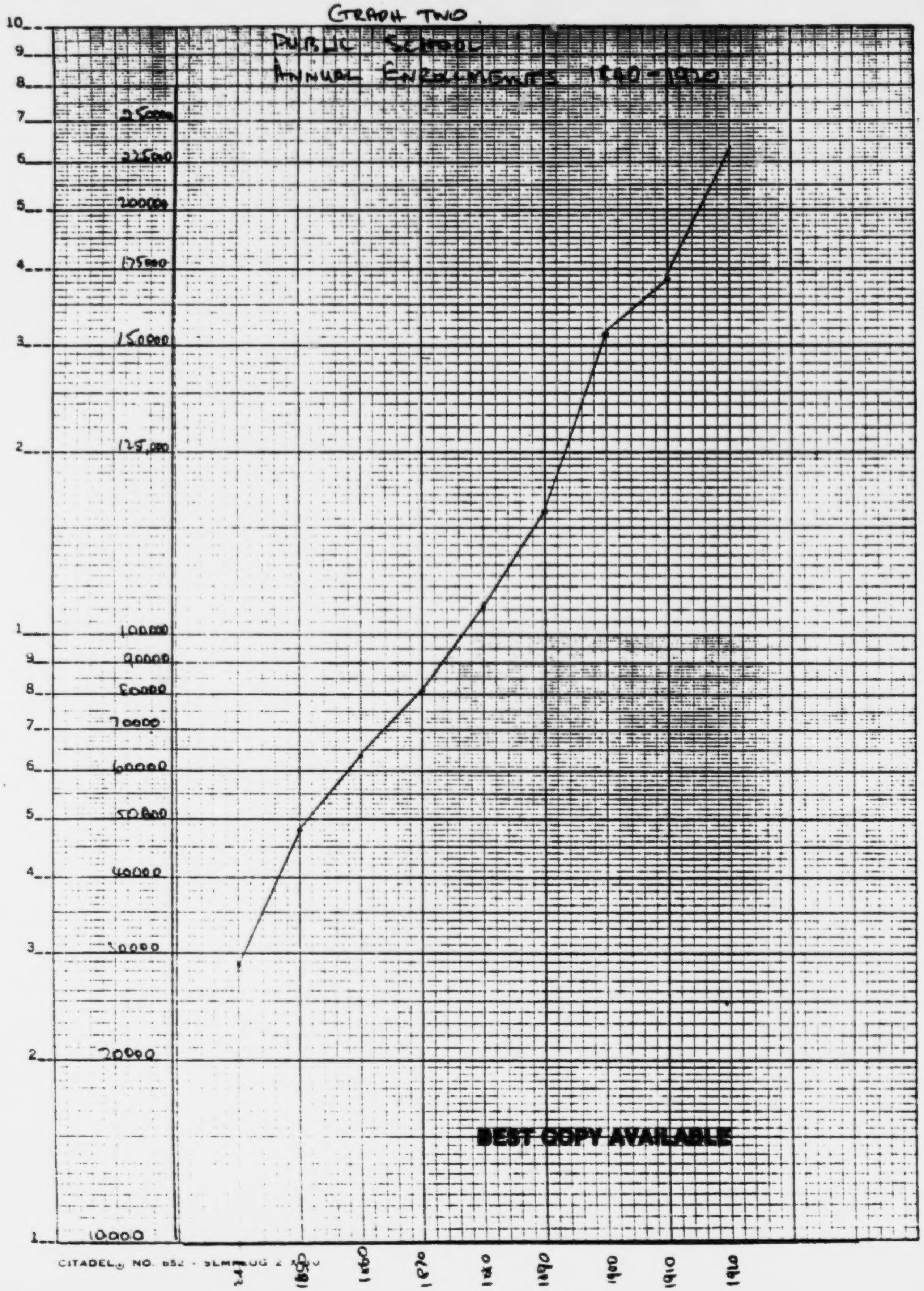
(n) Estimate only, based on deducting number of children at public school (derived from the Annual Report of the PBE) and a Census estimate of the total number of children in school.

(o) Based on PBE figures of total enrollment after deducting the number of children over 15 from the total of 172,510.

(p) PBE AR figure 169,536

(q) If the PBE AR figure of 169,536 is accepted for those at public school, then the number at private school equals 68,279.

(u) Includes 9,319 students in private schools and 71,392 in parochial and denominational schools.


GRAPH TWO
PUBLIC SCHOOL
ANNUAL ENROLLMENTS 1840-1920

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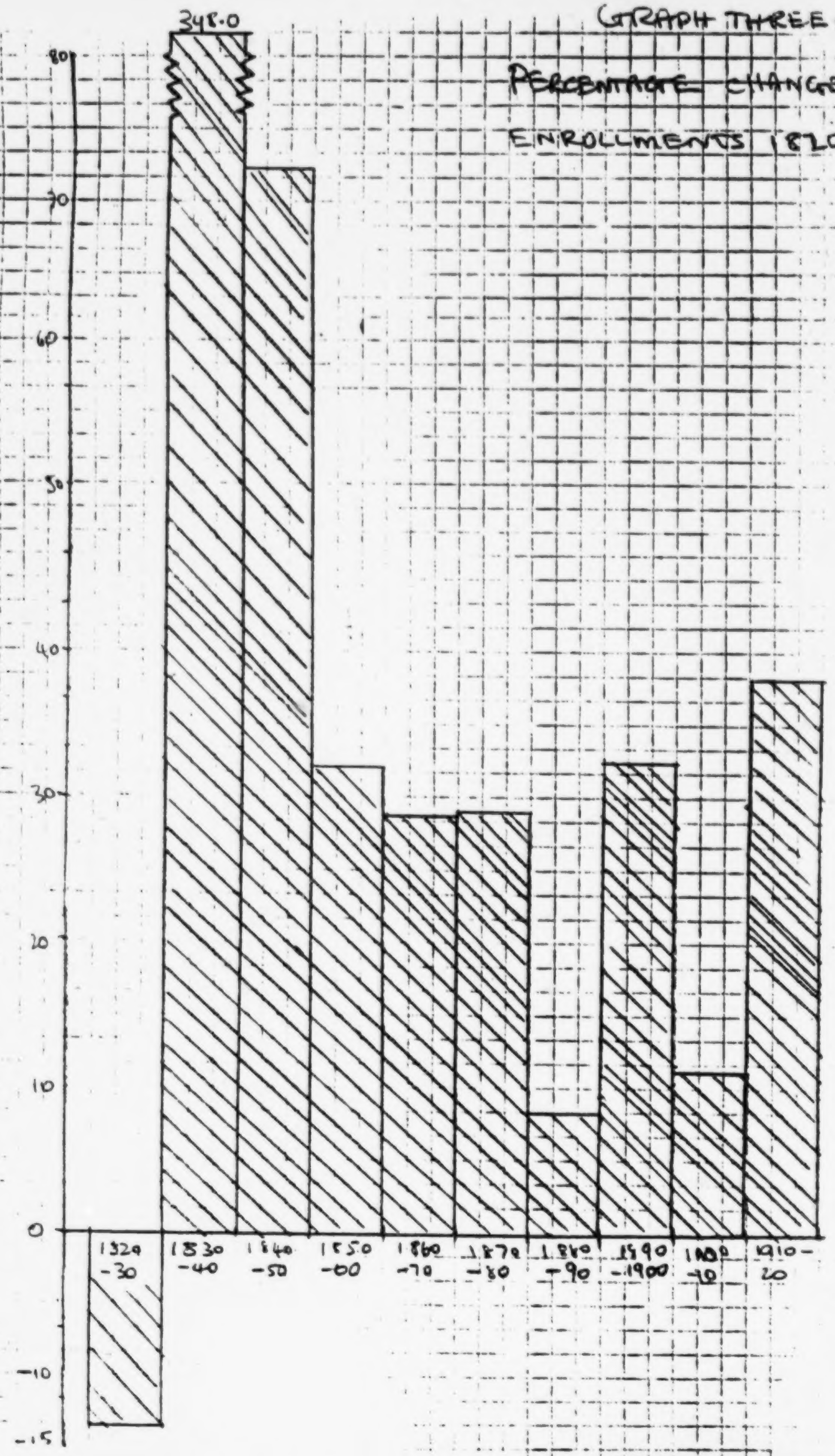
GRAPH THREE.

PERCENTAGE CHANGE IN ENROLLMENTS 1820-1920.



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The figures reported in Tables 4 & 5 indicate that betwen 1830 and 1840 the percentage of all children, 0-19, in public school jumped from 5.3% to 20.4%, and that thereafter the percentage rose gradually to a high of 35.1% in 1920.

Tables Four & Five also enable us to compare the percentage of children at school in public and private and denominational schools, at least for most decades afte 1840. In 1840, 92.4% of all children 0-19 at school were enrolled in public school, but thereafter the percentage declined steadily to 72.6% by 1920, hitting a low of 68.3% in 1910. The percentage of children in private and denominational schools thus increased from 7.6% in 1840 to a high of 34.7% in 1910, dropping to 27.4% in 1920. Most of this increase can be accounted for, however, by the rapid expansion of enrollments in Catholic parochial schools. In 1840, of the 1,917 children enrolled in all non public schools, only 11.4 were enrolled in Catholic & parochial schools; in 1850 the proportion was even lower (2.4%). During the 1850's, however, Catholic school enrollments increased dramatically, up to 5502 by 1860. According to the 1867 School Census, 48.1% of all children enrolled in non public schools were enrolled in parochial and denominational schools, and 51.9% in "private" schools, although the figures in Table Six suggest that the enrollments in Catholic schools were far higher than indicated by the school census. By 1920, of the 80,711 children enrolled in non public schools 88.4% were enrolled in parochial and denominational schools, the great majority of these in Catholic parochial schools. The figures also suggest that at

Table Five

PERCENTAGE OF CHILDREN AT SCHOOL, AT PUBLIC SCHOOL, AT PRIVATE SCHOOL

Year	% of All Children 0-19 at School	% of All Children 5-14 at School	% of All Children 0-19 in Public School	% of Children 10-15 at work	% of Children 0-19, at School in Public School	% of Children 0-19 at School, in Private and Parochial Schools
1820	-	-	8.0		-	-
1830	-		5.3		-	-
1840	22.1	-	20.4		92.4	7.6
1850	28.9	-	25.9		89.5	10.4
1860	-	-	28.1		-	-
1867 (6-18)	40.2	61.6	46.6	12.7	75.6	24.4
1870	40.7	-	30.3	10.0	74.5	25.4
1880	-		32.4	17.1	(76.0)	
1890	37.6	-	29.1		77.4	22.6
1900	35.1		31.8	20.6	81.2	18.8
1910	42.4		28.9	14.5	68.3	31.7
1911 (6-15)		91.6 (6-15)	59.8 (6-15)	4.0	65.3 (6-15)	34.7 (6-15)
1920	48.3	96.8	35.1	6.2	72.6	27.4
1920 School Census (6-15)		90.6 (6-15)	65.5 (6-15)	3.6	72.8 (6-15)	27.2 (6-15)

Table Six

AGGREGATE TOTALS ON ATTENDANCE AT CATHOLIC ACADEMIES, SELECT SCHOOLS, AND PAROCHIAL SCHOOLS IN PHILADELPHIA FROM 1836 TO 1900

YEAR	# SCHOOLS	#SCHOOLS/ENROLLMENT	TOTAL ENROLLMENT
1836	3	0	
1837	4	0	
1838	2	1	180
1839	4	2	380
1840	1	1	220
1841	4	3	370
1842	3	1	200
1843	3	1	200
1844	5	2	320
1845	5	2	320
1846	6	2	320
1847	8	3	464
1849	8	5	680
1850	7	2	243
1852	6	1	150
1853	20	12	2300
1854	17	16	4840
1855	20	17	5494
1856	19	17	5010
1858	24	20	5502
1860	23	23	6498
1861	23	22	6142
1864	54	52	
1865	59	59	20987
1866	73	73	22000+ (acad. not included)

Table Six (cont'd)

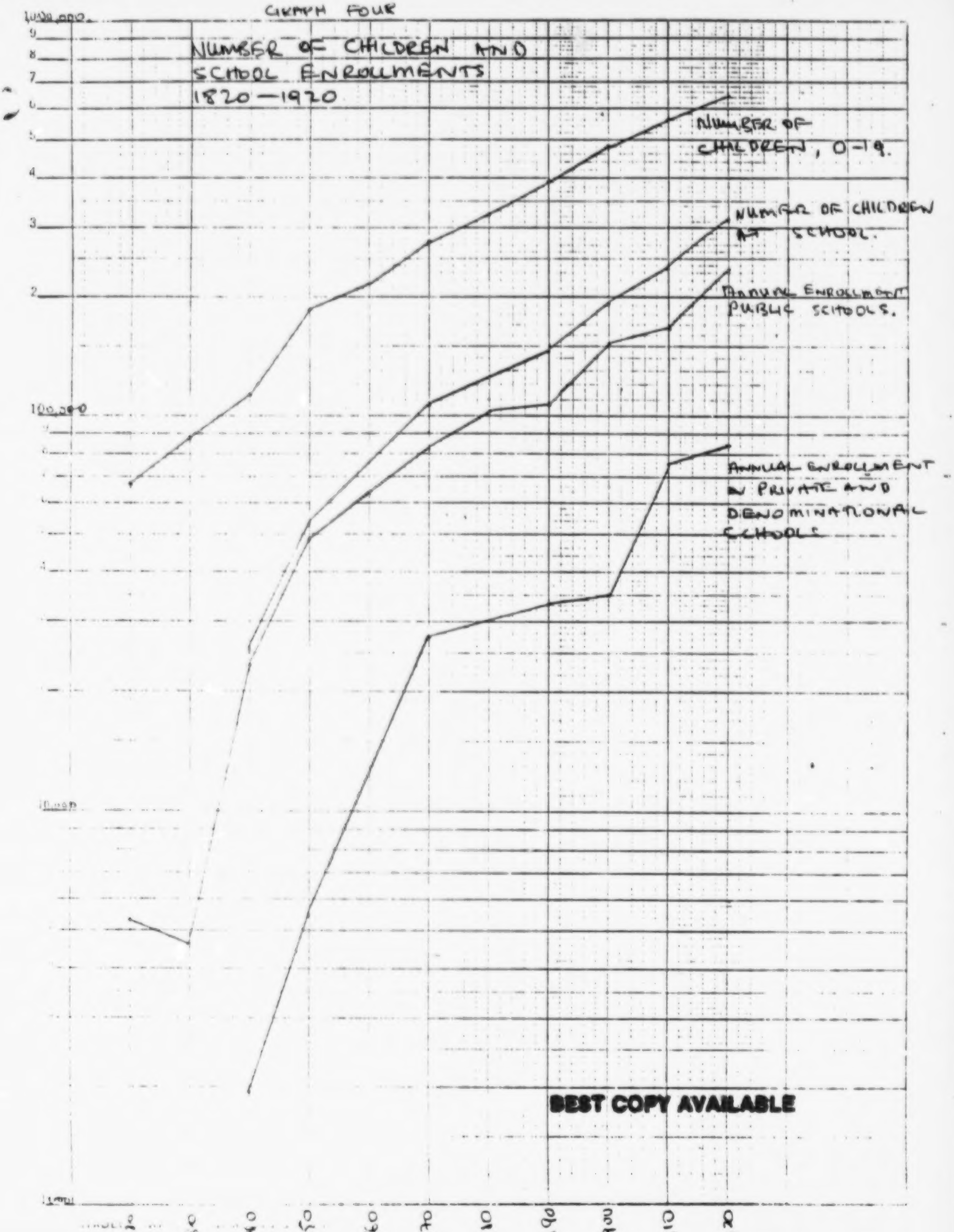
YEAR	# SCHOOLS	#SCHOOLS/ENROLLMENT	TOTAL ENROLLMENT
1868	76	76	25000+
1870	66	66	27000+
1872	63	63	21692
1875	76	76	22000
1878	79	78	22000
1880	78	77	22000
1883	84	82	24100
1885	85	82	22353
1887	91	86	27165
1890	98	98	29532
1893	97	96	31892
1895	112	110	33089
1900	119	119	41470

Source: Catholic Directories, from the Archives of the Catholic Historical Society, St. Charles Borromeo Seminary; Joe Casino, Archivist.

According to Father De Mayo, Librarian at the Graduate School at the St. Charles Borromeo Seminary, and Archivist for the Archdiocese, the following reasons might be given for the dramatic increases in student enrollment in the '50s and early '60s; the former years may have been influenced by the Bible Controversy, and the Know Nothing Riots, and a Council of Baltimore decision that every parish should have a school; the latter years by a campaign by Bishop Neuman to encourage enrollment in Catholic Schools. He mentioned that immigration was a factor.

The book by Father Donaghy, Philadelphia's Finest, a History of Education in the Catholic Archdiocese 1692 - 1970, should be helpful.

GRAPH FOUR



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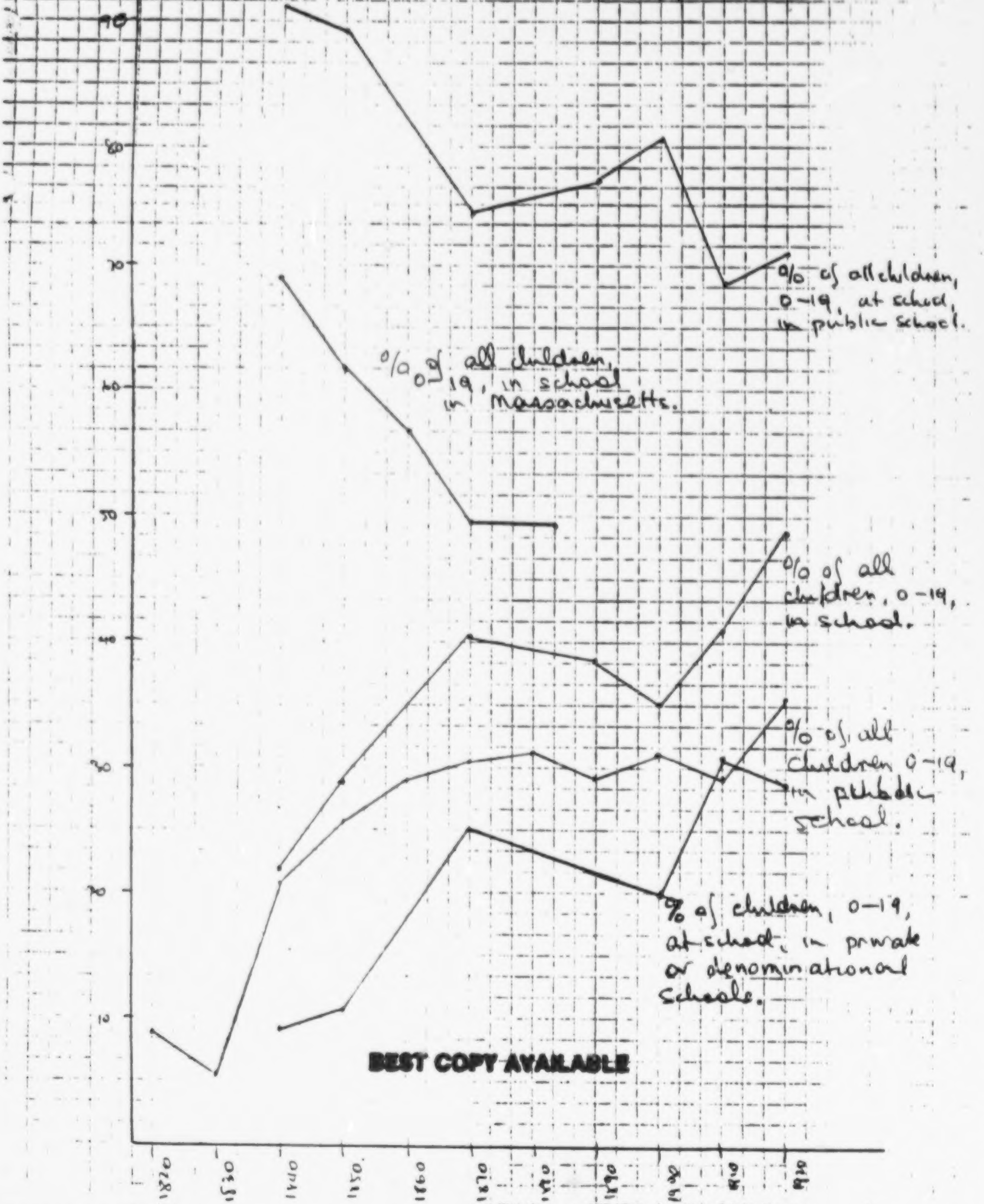
GRAPH FWF: PERCENTAGE OF CHILDREN AND SCHOOL ENROLLMENTS, 1820–1920



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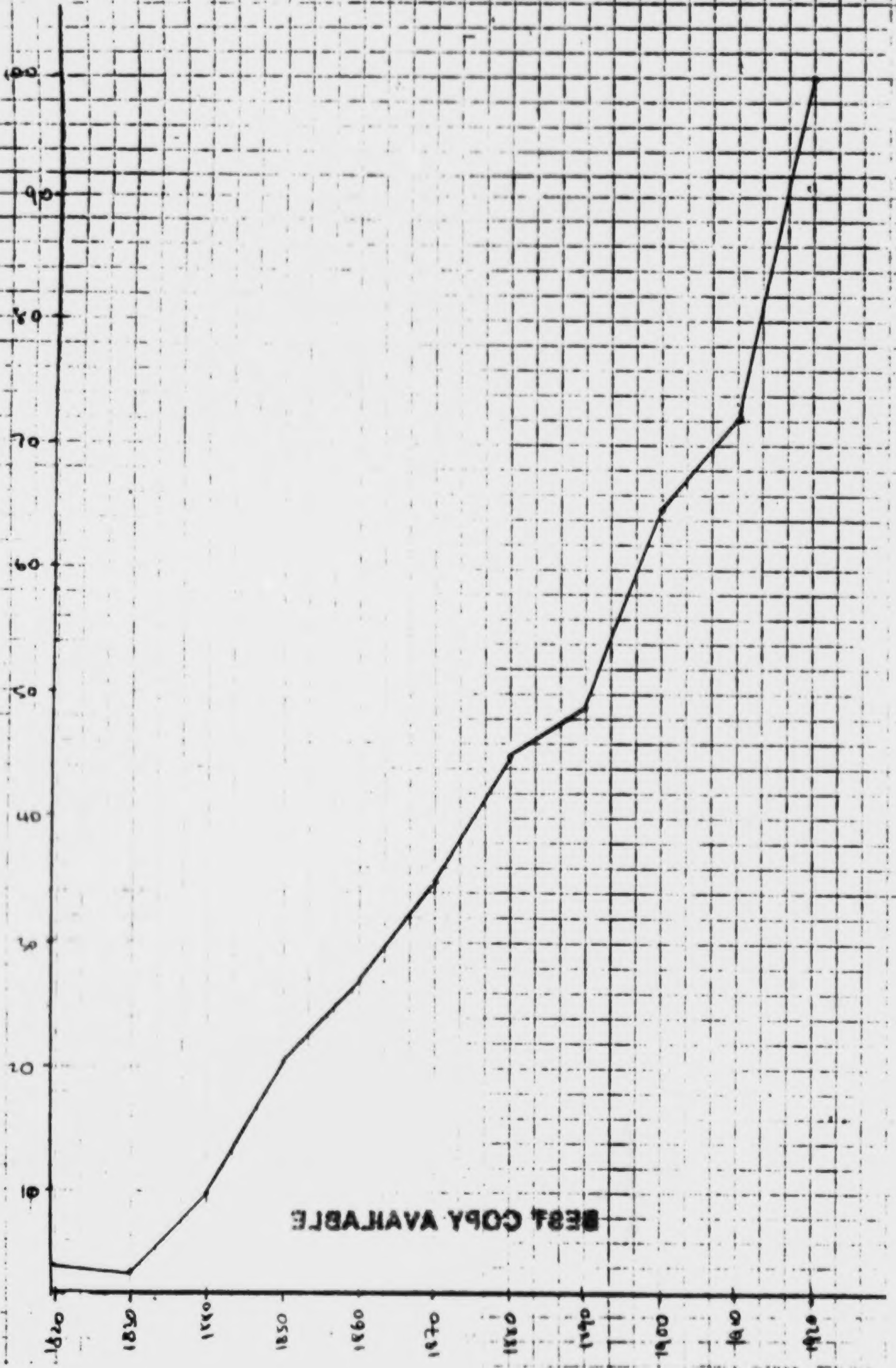
PUBLIC SCHOOL ENROLLMENTS AS A PERCENTAGE OF 1920 ENROLLMENT



least after 1867 the number of children in private schools remained fairly constant, and therefore a declining proportion of non-public school enrollments.

Perhaps the most interesting figures, however, in Tables are those contained in the first column: the percentage of children of the 0-19 age cohort enrolled at school, whether public and private. The year 1840 is the first year for which we have information on the percentage of children 0-19 at school. From a figure of 22.1% in 1840 the percentage rose gradually to a high of 48.3% in 1920, although in the 1880's and 1890's the proportion dipped to 37.6% in 1890 and 35.1% in 1900. In part this can be accounted for by the number of children at work (20.6 of the 10-15 age cohort in 1900) although since we do not know how many children were neither at work or at school, nor the number of chidlren of this age cohort at school, it is not possible to determine the real contribution that child labor made to the decline in the proportion of the relevant age cohort at school. Moreover, since national census age cohort data does not provide information on the percentage of the 5-14 age cohort at school before 1920, we are restricted to the school census' of 1867, 1911 and 1920 for information on the basic school going population. The 1867 school census indicated that 61.6% of the 6-18 age cohort were in school; by 1911 however, 91.6% of the 6-15 age cohort were enrolled in school (the percentage dropped slightly to 90.6% in 1920).

Although the increase from 22.1% in 1840 to 48.3% in 1920 reflects a more than a doubling of the 0-19 age cohort enrolled in school, the increase was not spread evenly over the 8 decades in between. In the 1840's, the percentage of the age cohort at school increased from 22.1% to 28.9%, slightly over a quarter of the total increase between 1840 & 1920. By 1867 the percentage had climbed to slightly over 40%, accounting for an additional 47% of the total increase betwen 1840 & 1920. Thereafter it declined slightly to a low of 35.1% in 1900, before climbing about seven percentage points in each of the two succeeding decades. In other words, over three quarters of the increase took place between 1840 & 1867, although following the slump between 1870 & 1900, the relative size of the increase between 1900 & 1920 was also very considerable.

At first sight this pattern of growth might seem to confound the earlier conclusions concerning the growth of public school enrollments. The rapid growth of the percentage of the 0-19 age cohort in school after 1890 is consistent with the conclusion that the period after 1900, especially after 1910, witnessed a continuous and rapid expansion of public school enrollments. The data in Table Four indicate that enrollments in private and denominational schools also increased rapidly after 1900, more than doubling between 1900 and 1910. But the large increase in the percentage of the 0-19 age cohort at school is not reflected in public school enrollments. Moreover, the decline in the percentage of the 0-19 age cohort at school is not what one would expect, given the fact that public school enrollments increased dramatically during the 1890's. The solution to the first anomaly is the 335% increase in private and parochial school enrollments between 1850 and 1867, whereas the percentage increase in public school enrollments was much less impressive. The result was a considerable decline in the proportion of all children enrolled in public schools, from 89.5% in 1850 to 75.6% in 1867.

The solution to the 1890's anaomaly can also be resolved by the growth trend of private and parochial school enrollment. Between 1890 and 1900 private and parochial school enrollments increased by less than 2000, or by a mere 5%, whereas the number of children in the 0-19 age cohort increased from 392,000 to 476,198, an increase of 84,198. Public school enrollments increased considerably during the 1890's, as noted earlier, but the increase - from 114,317 to 151,455, or 37,138- was not large enough to make up for the drop in the growth rate of private and parochial school enrollments. Apparently the "take off" of the 1890's was a phenomena limited to public school enrollments.

Comparative perspectives for the late 19th and early 20th centuries for other cities are not, unfortunately, available. The findings of Kaestle and Vinovskis study of 19th century Massachusetts do provide a comparison, but only up to 1880, whereas if Philadelphia is any guide, it is the period after 1880 tha is the truely interesting period in the history of school enrollments. Still, the comparisons before 1880 are interesting, and indicates slightly different patterns in the two localities. Kaestle & Vinovskis report that from an enrollment of 68.6% of all children aged 0-19 in 1840-41, and 62.4 in 1850-51, the percentage slowly dropped to 49.3 in 1879-80 (Kaestle & Vinovskis Table A2-5, pp

246-247). By contrast, in Philadelphia, the direction was the reverse: from a low of 22.1% in 1840 to 40.7% in 1870, 35.1% in 1900, and 48.3% in 1920. In part the difference might be an urban-rural difference: Kaestle and Vinovskis' figures are for the state as a whole, whereas no such figures have as yet been computated for Pennsylvania. Yet if Philadelphia is compared to Boston and Salem in Massachusetts, and New York city, the proportions are only comparable for New York, and not entirely comparable for Boston and Salem, although much more so than for the figures for Massachusetts as a whole. In 1829 32.0% of all children 0-19 were enrolled in school in New York city; in 1840 the proportion had dropped to 21.9%, and by 1850, 26.3% (Kaestle & Vinovskis, 18). In Philadelphia the proportions were very similar: 22.1% in 1840, and 28.9% in 1850. In Boston and Salem, 20.9% and 30.0% respectively of the 0-19 cohort were enrolled at school in 1826; in Salem in 1834, 41.4% were enrolled and in 1837, 44.7%. In 1875, 41.8% of the cohort were enrolled (compared to 40.7% in Philadelphia in 1870). It seems then that for both rural and urban areas in Massachusetts, the percentages of children 0-19 enrolled in school were higher in the early decades of the century, but whereas the percentages declined over the course of the 19th century, in Philadelphia they increased, at least until 1870-1900, and then increased rapidly between 1900 and 1920.

On one further point the history of enrollments in Philadelphia was significantly different from that of Massachusetts. Kaestle & Vinovskis report (33-34) that one of the important victories of common school reformers in the 1830's and 40's was their capacity to reduce the percentge of children, 0-19, enrolled in private schools: whereas in 1840, 13.8% of all those enrolled were in private schools, by 1880 the percentage was down to 8.4%. By contrast, in Philadelphia the trend was in the opposite direction: from a level of 7.6% in 1840, by 1870 the proportion had reached 25.4%; by 1900 it admittedly dropped to 18.8%, but by 1910 it had stretched up to 31.7%. It is true that private school enrollments in Philadelphia did not increase proportionally during the 2nd half of the 19th century compared to Catholic parochial school enrollments, but in terms of non public school enrollments in general, the pattern in Philadelphia after 1840 was very different from that of the state of Massachusetts as a whole.

Table Seven

NUMBER OF STUDENTS
BY LEVEL OF SCHOOLING
1818 - 1842

Year	Infant	Model	Primary	Secondary	Unclassified	Grammar	High School	Total
1818		733			2112			2845
1819		700			2568			3268
1820		564			4805			5369
1821		596			2373			2969
1822		427			2320			2747
1823		542			2164			2706
1824		563			2405			2968
1825		582			2925			3507
1826		605			3387			3902
1827		632			3271			3903
1828		550			3747			4297
1829		508			3798			4303
1830		443			4214			4657
1831		413			4189			4602
1832	65	276			4456			4797
1833	180	424			6163			6767
1834	1433	444			6467			8344
1835	1230	440			6376			8046
1836	1214	372			5541			7127
1837	1388	380	5400		6454			16761
1838	1581	426	5270		11517			18794
1839	1517	422	7008		12932		89	21968
1840	1684	424	7000		14084		230	23192
1841	267	426	9342	2594	6347	8445	307	27808
1842	-	445	12624	4189	5790	9221	383	33130
1845		(539)	13601	5732	5867	11058	407	33665

TABLE EIGHT

Number of Students by Level of Schooling

1837 - 1925

Year	Infant	Unclass.	Primary	Second.	Grammar	High	Consolid.	Model/ Normal.	Miscellan. Unknown
1837	1581	6454	5,400					380	
1841	267	6347	9,342	2,597	8,445	307		426	
1845		5867	13,601	5,732	11,058	407		(539)	
1850-51		3347	23,735	7,530	11,021	502		473	1448
1855		4661	27,423	10,220	11,381	601		440	
1860			33,126	11,665	13,266	556		340	
1865			40,110	14,485	10,472	449		328	
1871			39,026	19,921	12,727	572	8299	530	
1875			48,990	24,308	13,967	601	7031	655	
1880			54,942	26,276	14,934	480	7630	976	
1885			48,609	28,112	16,978	610	6272	1130	
1890			32,059	16,909	13,910	609	7611	1555	
1895			17,567	8,472	10,339	2,897	6825	686	
1900			104,352		34,675	4,568		303	
1906			110,846		44,917	6,954		484	(1476)
1910			97,008		54,954	11,580		630	1094
1915			104,322		67,927	16,329		935	
1920			105,403		81,885	22,176		525	3035
1925			117,901		84,745	30,131		1098	

Table 8 (cont'd)

Night	Kinder.	Continuation, Trades Schools & Manual Training High Schools	Combined Schools	Junior High Schools	School of Practice	Day Schools Only	Total
						16,761	16,761
						27,808	27,808
						36,665	36,665
						48,056	48,056
					244	54,813	54,813
						63,530	63,530
						75,893	75,893
6,353						81,075	87,428
—						95,552	95,552
					303	105,631	105,631
			5,871		591	108,209	108,209
	2,580	413	38,115		545	114,317	114,317
	5,265	662	78,451		373	131,547	131,547
	7,405	(837)			571		151,455
11,473	7,333	2,410				172,944	184,417
6,466	4,270	—				169,536	176,002
22,724	4,728	1,815				196,056	218,770
15,515	3,845	7,424		1,625		226,130	241,635
31,934	9,866	7,838		21,215		272,796	304,730

Table Nine

PERCENTAGE OF STUDENTS
BY LEVEL OF SCHOOLING
1820 - 1920

Year	Infant	Kindergarten	Primary	Secondary	Grammar	Unclassified	Consolidated	High
1820	--	-	--	--	--	89.5	--	--
1830	--	--	-	--	--	90.5	-	--
1841	1.0	--	33.5	9.3	30.3	22.8	-	1.1
1850-51	--	--	49.3	15.6	22.9	6.9	--	1.0
1860	--	--	52.1	18.3	20.8	--	--	0.8
1871	--	--	48.1	24.5	15.6	--	10.2	0.7
1880	--	--	52.0	24.8	14.1	--	7.2	0.4
1890	--	2.2	28.0	14.7	12.1	--	6.6	0.6
1900	--	4.8	68.8	--	22.8	--	--	3.0
1910	--	2.5	57.2	--	32.4	--	--	6.8
1920	--	1.6	46.6	--	36.2	--	--	9.8
1925	--	1.7	43.2	--	31.0	--	--	11.0

Table 9 (cont'd)

Year	Model	Junior High	Continuation Trades Manual Training	School of Practice	Combined	Other	Total Enrollment - Day Schools
1820	10.5	--	--	--	--	--	5,369
1830	9.5	--	--	--	--	--	4,657
1841	1.8	--	--	--	--	--	27,808
1850	0.9	--	--	--	--	--	48,056
1860	0.5	--	--	--	--	--	63,530
1871	0.7	--	--	-	--	--	87,428
1880	0.9	--	--	-	--	--	105,631
1890	0.9	--	0.3	0.4	33.3	--	114,317
1900	0.2	--	--	--	--	--	151,455
1910	0.3	--	--	--	--	0.6	169,536[a]
1920	0.2	0.7	3.2	--	--	1.3	226,130
1925	0.4	7.7	3.2	--	--	--	272,796

Table Ten

PERCENTAGE INCREASE IN STUDENT ENROLLMENT, BY LEVEL OF SCHOOLING

1818 - 1920

Year	Infant, Kindergarten	Primary	Secondary	Grammar	Unclassified Consolidated, Comb.	High (incl. MTS PTS.	Model Normal	Total
1818					2,112		733	2,345
1820					127.5		- 23.0	88.7
1830	65 [a]	5400 [b]			- 12.2	89 [c]	- 21.0	- 13.2
1841	310.7	73.0	2597	8445	234.2	244.9	- 4.2	497.1
1850-51		154.0	189.9	30.5	- 76.2	118.2	11.0	72.8
1860		39.5	54.9	20.3		9.5	- 28.1	32.1
					Consolidated			
1870		17.8	70.7	-4.0	8299	0.5	55.8	37.6
1880		40.7	31.9	17.3	- 8.0	-13.2	84.1	20.8
					Consolidated + Combined			
1890	2580	- 41.6	35.6	(-6.8)	499.2	26.8	59.3	8.2
1900	187.0	225.4		149.2		650.0	-80.5	32.4
1910	- 42.0	- 7.0		58.4		159.4	107.9	16.2
1920	- 9.9	8.6		49.0		30.1	-16.6	37.2
1850-1900		339.6	911.7 [d]	214.6		809.9	-35.9	215.1
1870-1920		170.0		543.3		3,776.9	- 0.9	176.3
1920-		1851.9		869.6		7,123.4	-28.3	4400.5

a = 1832

b = 1837

c = 1839

d = Between 1840 + 1880

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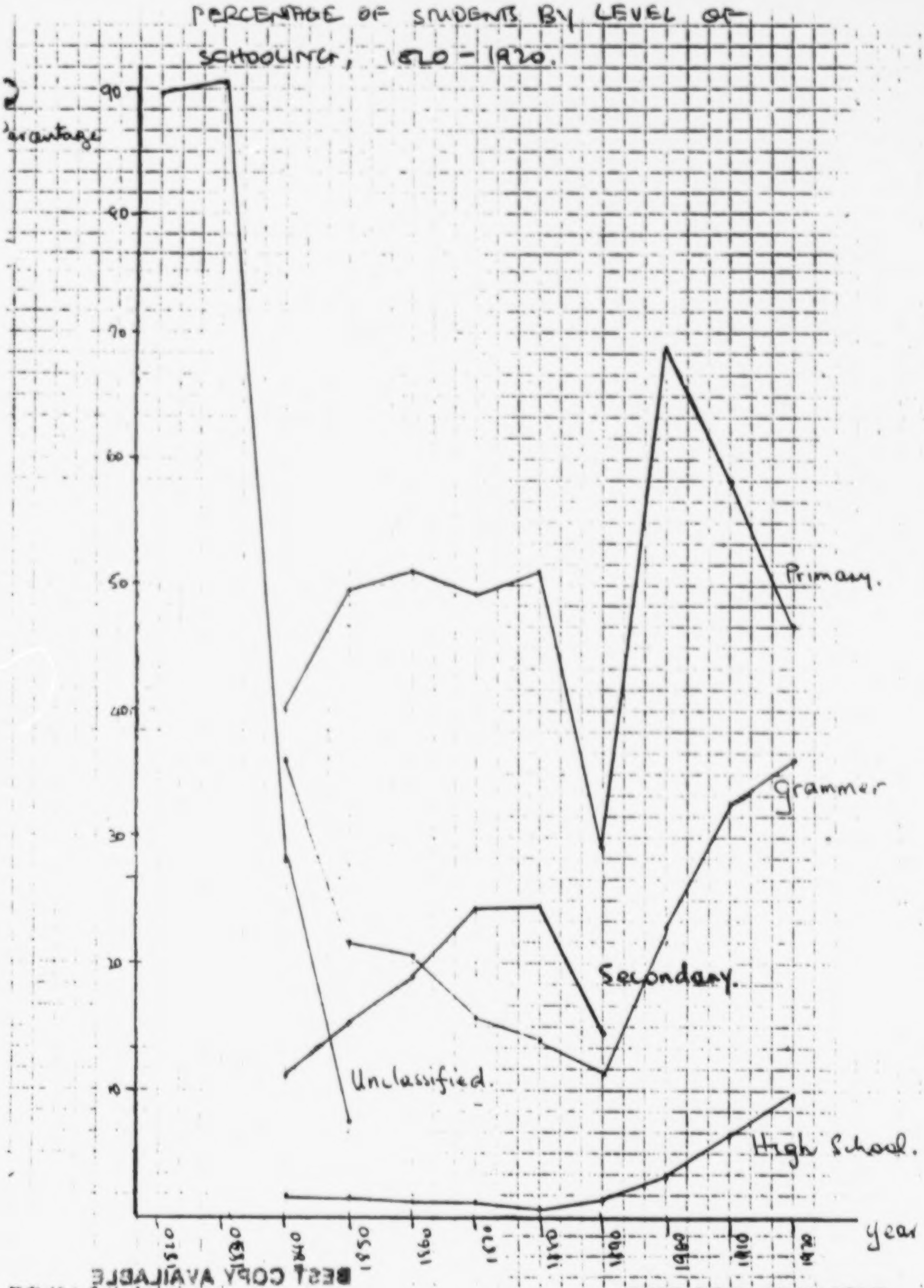
PERCENTAGE OF STUDENTS BY LEVEL OF SCHOOLING, 1820 - 1920.

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Table Eleven

ABSOLUTE PERCENTAGE INCREASE OF ENROLLMENTS BY LEVEL OF SCHOOLING

	Primary	Secondary	Grammar	High (Including MTS)
1840 - 1880	488.1	911.7	76.8	56.3
1850 - 1900	339.6	--	214.6	809.9
1870 - 1920	170.0	--	543.3	3776.9
1840 - 1920	1560.7	--	869.6	7123.4
1840 - 1900	1017.0	--	310.5	1387.9
1900 - 1920	1.0	--	136.1	385.4

III. ENROLLMENT BY LEVEL OF SCHOOLING

The level of enrollment and its rate of growth are not the only phenomena of interest to historians of education. So too is the changing pattern of distribution of enrollments across the various levels of schooling between 1820 and 1920.

From the creation of the First School District in 1818 until the passage of the 1836 act the great preponderance of students were enrolled in the ungraded or unclassified schools, as Table Seven indicates. In 1818 74.2% of the students were enrolled in the unclassified schools; in 1836 77.7% were so enrolled. Some 17.0% were enrolled in infant schools and the remainder in hte model school. Beginning in 1837, however, the number of students enrolled exploded, new types of schools were introduced, and the distribution of students began to alter: Four years later a relatively complex picture had emerged. Only 22.8% of the students enrolled were enrolled in the unclassified schools: the balance were distributed among primary schools (33.5%), secondary schools (9.3%), high school (1.1%), infant schools (1%), grammar schools (30.3%), and model school stuents (1.5%). (Table Nine)

In the decade that followed, the number of children in unclassified schools dropped even further, to 6.9% of total enrollmens by 1850-51. By 1860 the Board had dropped unclassified schools entirely, and employed a system of graded schools exclusively. Between the late 1860's and the late 1890's it employed a system of consolidated and combined schools, which in one year, 1890, accounted for 39.9% of all student enrollment. Unlike th unclassified schools, however, these schools were graded and in no way represented a departure from the system of graded schools established in the late 1830's-early 1840's.

Throughout the 19th century primary schools continued to carry the major responsibility for educating the children of Philadelphia. (Table Nine). The percentage of children enrolled in the primary schools increased from 33.5% in 1841 to a peak of 68.8% in 1900. In effect, the proportion of children in primary schools doubled from one third to two thirds. This was not due, however, to the fact that enrollments in secondary, grammar and high schools were not increasing, but that the increases were concentrated in the primary schools. The percentage of children insecondary schools likewise increased, although they accounted for significantly smaller proportion of school enrollments than primary school enrollments, increasing from 9.3% in 1841 to a peak of 24.8% in 1880. (Table Nine) In 1898 primary and secondary schools were combined into 4 year Elementary Schools, helpling to account in part for the growing relative importance of the primary schools in the late 19th century. Overall, between 1850 and 1900 primary school enrollments increased 339.6%. (see Table Eleven). Meanwhile, the proportion of students in grammar schools declined from 30.3% in 1841 to 22.8% in 1900, although in the interim the number of students enrolled in grammar schools increased 310.5% , and the period of grammar schooling increased to 4 years in 1886. At the same time the proportion of students in high school increased from 1.1% to 3.0%.

Between 1840 and 1900 then the locus of the increase in enrollments took place in the first 4 years of schooling: the years of primary and secondary schooling, or as it was called after 1898, elementary school. After 1900, however, the picture changes dramatically. Elementary school enrollments barely increased at all - a mere 1.0% increase in 20 years. As a percentage of the total enrollments, elementary school enrollments dropped from 68.8% in 1900 to 46.6% in 1920. Meanwhile, grammar school enrollments increased dramatically, rising from 22.8% in 1900 to 36.2% in 1920, more than a third of all enrollments. At the same time enrollmens in high schools increased by even greater amounts. In 1890 high school enrollments accounted for only 0.6 of all enrollments; by 1900 that figure had jumped to 3.0%, and by 1920, to 9.8%. Including students enrolled in continuation, manual training and trades schools lifts that figure even further to 13.0%. Overall, between 1890 and 1920 enrollments in high schools proper rose 3541.3%, a remarkable increase by any standard.

An alternative way of measuring the shifting locus of enrollments is reported in Table 12. The table is constructed on the assumption that the distribution of students by grade within any level of schooling is equal, perhaps a reasonable assumption for primary and secondary grades, but less so for grammar school. The table measures the median grade enrollment, that is, the grade in which 50% of the students are above and 50% below. As the data indicate, the median grade dropped from 5th grade in 1841 to 2nd in

Table 12

DISTRIBUTION OF STUDENTS BY GRADE

YEAR	ONE	TWO	THREE	FOUR	FIVE	SIX	MEDIAN GRADE
1841	16.8	16.7	4.7	4.6	15.2	15.1	5th
1851	24.6	24.6	7.8	7.8	11.5	11.4	3rd
1860	26.1	26.0	9.2	9.1	10.4	10.4	2nd
1970	24.1	24.0	12.3	12.2	7.8	7.8	3rd
1880	26.0	26.0	12.4	12.4	7.1	7.0	2nd
1890	-	-	-	-	-	-	-
1900	17.2	17.2	17.2	17.2	5.7	5.7	3rd
1910	14.3	14.3	14.3	14.3	8.1	8.1	4th
1920	10.8	10.8	10.8	10.8	7.7	7.7	5th

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Table Twelve

YEAR	PUBLIC SCHOOL ENROLLMENT	PUBLIC SCHOOL DAILY ATTENDANCE	PER-CENTAGE	TOTAL ENROLLMENT	AVERAGE DAILY ATTENDANCE	SIZE OF 0-19 AGE COHORT
1850-51	48,056	39,492	82.1	53,645	44,042	185,074
1860	63,530	54,687	86.0	--	--	225,432
1870	81,854	71,556	87.4	108,751	95,048	267,199
1880	105,541	94,145	89.2	--	--	325,466
1890	114,306	99,332	86.9	147.744	128,389	392,023
1900	151,455	145,538	96.0	186,660	179,193	476,198
1910	68,493	155,174	92.0	237,815	218,789	560,500
1920	233,214	201,108	86.2	311,083	268,153	643,171

- - - - - -

YEAR	PERCENTAGE AVERAGE DAILY ATTENDANCE OF ALL CHILDREN 0 - 19	PERCENTAGE AVERAGE DAILY ATTENDANCE OF ALL CHILDREN 0-19 IN MASSACHUSETTS
1850-51	23.7	37.3
1860	--	36.6
1870	35.5	36.4
1880	--	37.9
1890	32.7	--
1900	37.6	--
1910	39.0	--
1920	41.6	--

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1860, back up to 3rd in 1870, and back down to 2nd in 1880. Sometime between 1880 and 1900 the median grade jumped to 3rd grade; in 1910 it jumped again to 4th grde, and in 1920, 5th.

The enrollment figures thus suggest an unmistakeable break in the pattern of growth of enrollments towards the end of the 19th century. Before 1900 most children who went to school went only for 2 or 4 years: in 1850 approximately 65%, in 1860 a little over 70%, in 1870 72.6%, in 1880 76.8%, of the enrollments were in grades below the grammar school. Sometime between 1880 and 1900 the pattern began to change; by 1900 only 68% of children enrolled were enrolled in grades below the grammar school (excluding children enrolled in kindergarten), and by 1920 that figure, as we have seen, dropped to 46.6% in 1920 and 43.2% in 1925. At some point between 1880 and 1900 the proportion of children staying on at school after elementary schooling began to increase dramatically. We noted earlier the fact that enrollments in general seem to have exploded from around the late 1880's - early 1890's, reflected in the fact that in 1890 only 49.0% of the 1920 level of enrollments had been reached after 70 years, whereas in the next 30 years enrollments more than doubled. Enrollment figures by level of schooling confirm that the logic of the processes governing the level and structure of school enrollments altered dramatically. It appears that around 1890 an educational "takeoff" took place in the level of enrollments and a revolution of sorts took place in the distribution of enrollments. The question of course is why.

The figures on the distribution of enrollments by level of schooling also suggest that at least at the level of timing and chronology, the changing distribution of enrollments within the schools in the decades after 1841 was associated with the triumph of the system of wage labor and extensive industrialization. If in fact they were causally related can not be determined from these figures alone, but it is clear that the early industrial revolution was associated chronologically with a significant transformation in the structure of school enrollments.

IV. THE INTENSIFICATION OF SCHOOLING

Nineteenth century Philadelphia witnessed not merely a dramatic explosion in the level of enrollments in public schools, but also a significant, if more restrained, growth in average daily attendance and in the number of days that Philadelphia's children attended public school per annum. Figures are not available for average daily attendance before 1850, but between 1850 and 1900, average daily attendance increased from 82.1% to 96.0%. Between 1900 and 1920 average daily attendance dropped however, to 86.2%, comparable to the level that obtained in 1860. (Table Twelve)

The reasons for this decline after 1900 pose something of a puzzle, and for two reasons: first, labor and compulsory education legislation passed in 1897, 1901, 1905, 1909 and 1915 tightened the legal requirements concerning enrollments and attendance; and second, the number of children at work in Philadelphia declined both absolutely and proportionally, from a high point in 1900 (Tables Four & Five). An explanation might be found in the possibility that with the passage of increasingly stringent child labor and compulsory education laws, children who otherwise might have worked instead enrolled at school and skipped school to babysit at home while both parents were at work or took up work on a part-time or casual basis.

Unfortunately, direct comparisons of average daily attendance in Philadelphia with those of schools in Massachusetts reported by

Kaestle & Vinovskis are not possible, since Kaestle and Vinovskis calculated the average daily attendance at public and private schools combined as a percentage of all children aged 0-19. Daily attendance rates for private and denominational schools are not available for Philadelphia. If we assume, however, that the average daily attendance in private and parochial schools was roughly the same as that of public schools, then it is possible to compute the average daily attendance of all children 0-19 in Philadelphia, as reported in the second last column of Table Twelve. Overall, average daily attendance of all children 0-19 in private, parochial and public education increased from 23.7% in 1850-51 to 41.6% in 1920, a significant increase. Due to gaps in Philadelphia's data, comparisons for only 2 years are possible with the Massachusetts data, and these indicate a much lower percentage in Philadelphia in 1850 but comparable rates in 1870.

One of the principal analytical innovations of Kaestle & Vinovskis' study of 19th century education in Massachusetts was the notion of the "intensificaiton" of schooling. Convinced that the expansion of enrollments did not capture all of the dimensions of the growth in the availability of schooling, they devised a means of measuring increases in the total amount of schooling received by Massachusetts children. By multiplying the length of the school year by the average daily attendance, and dividing by the number of children 0-19, it is possible to determine the number of days of school attended per child. Such a measure of the intensity of schooling, they argue, is easily as important a measure of the expansion of schooling as growth of enrollments and a primary objective of common school reformers like Horace Mann (23).

In their study of Massachusetts Kaestle & Vinovskis had the good fortune to have available to them school returns that reported length of school year and average attendance from early in the 19th century. Such data is not available for Philadelphia. In fact it is possible only to establish the minimum number of days schools were required by law to provide schooling: I have been able to find no way of determining how many days a year schools in fact did so open in Philadelphia, or Pennsylvania generally for that matter.

The legislation concerning the length of schooling is reported in Table Thirteen. Two features are noteworthy. The first is the reduction in the minimum length of the school year from 6 months in 1836 to 3 months in 1850; the second is the increase in the minimum from 3 months in 1850 to 9 months in 1911. The reduction in the minimum length between 1836 and 1850 was probably a consequence of rural pressure, but it is almost certain that urban schools were opened longer than required by law. Kaestle & Vinovskis, for example, discovered that the length of the school year was greater in urban compared to rural areas (24, 119-120, 133). The percentages reported in Table Nine then are, in all probability, lower than what in fact was characteristic of 19th century Philadelphia, and would thus in part explain the significantly lower per capita number of days of schooling in Philadelphia than obtained, in Massachusetts. Still, it is unlikely that it would explain all the difference; despite the 200% plus increase in the

Table Thirteen

LEGISLATION CONCERNING LENGTH OF SCHOOL YEAR

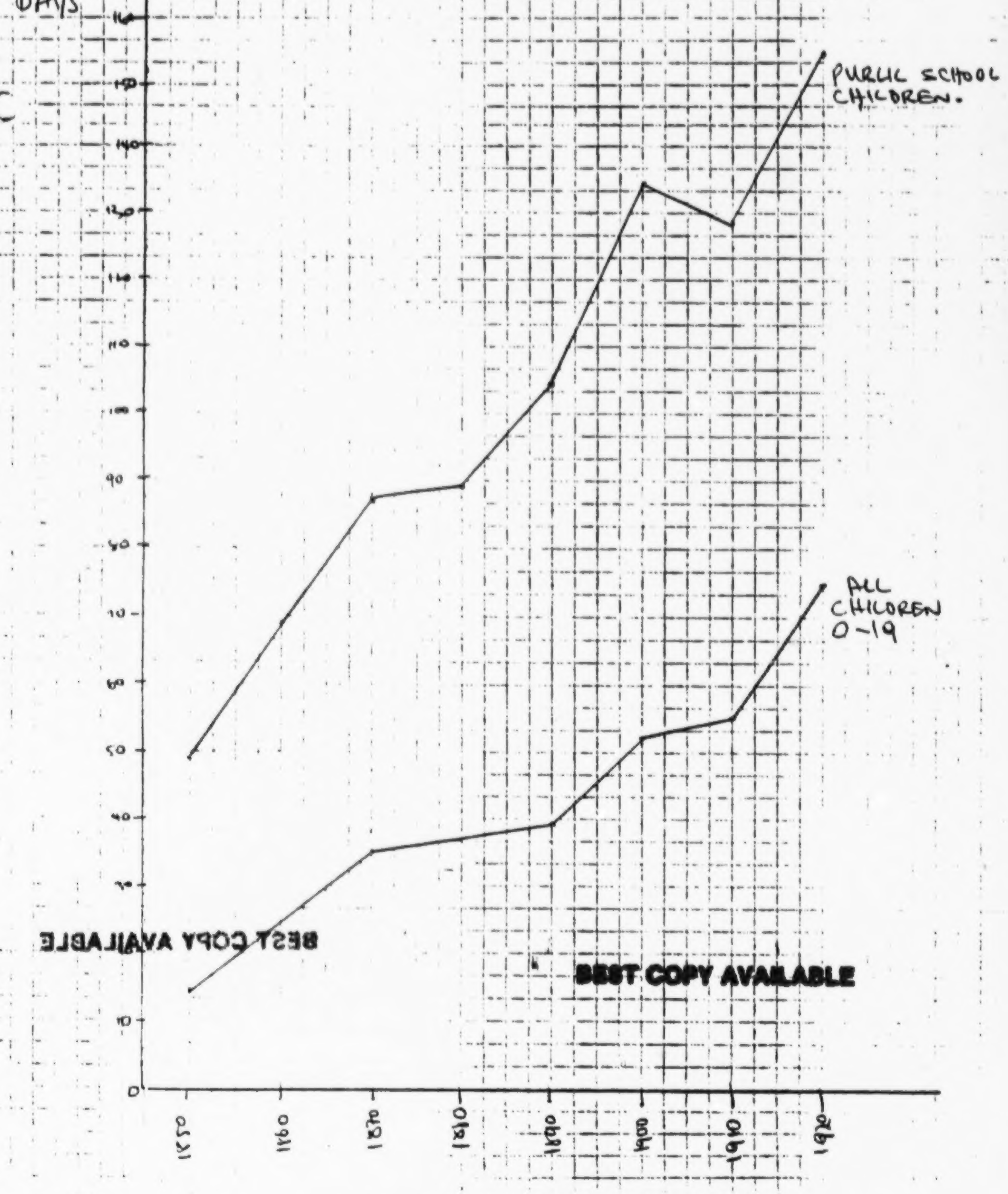
	Minimum	Maximum
1834	None Specified	
1836	6 Months (6 x 20 = 120)	
1849	4 Months (4 x 20 = 80)	6 Months
1850	3 Months (3 x 20 = 60)	
1854	4 Months (4 x 20 = 80)	
1872	5 Months (5 x 20 = 100)	
1887	6 Months (6 x 20 = 120)	
1899	7 Months (7 x 20 = 140)	
1911	9 Months (9 x 20 = 180)	
1921	9 Months (9 x 20 = 180)	

School Month:

1865	22 days (But 2 p.m. for Teacher Institutes)
1885	20 days

SOURCE: J.W.C. Remaley & M.J. Carney, Guide to School Laws of Pennsylvania. (Harrisburg 1939) 12.

AVERAGE NUMBER OF DAYS OF SCHOOLING PER YEAR, PHILADELPHIA.



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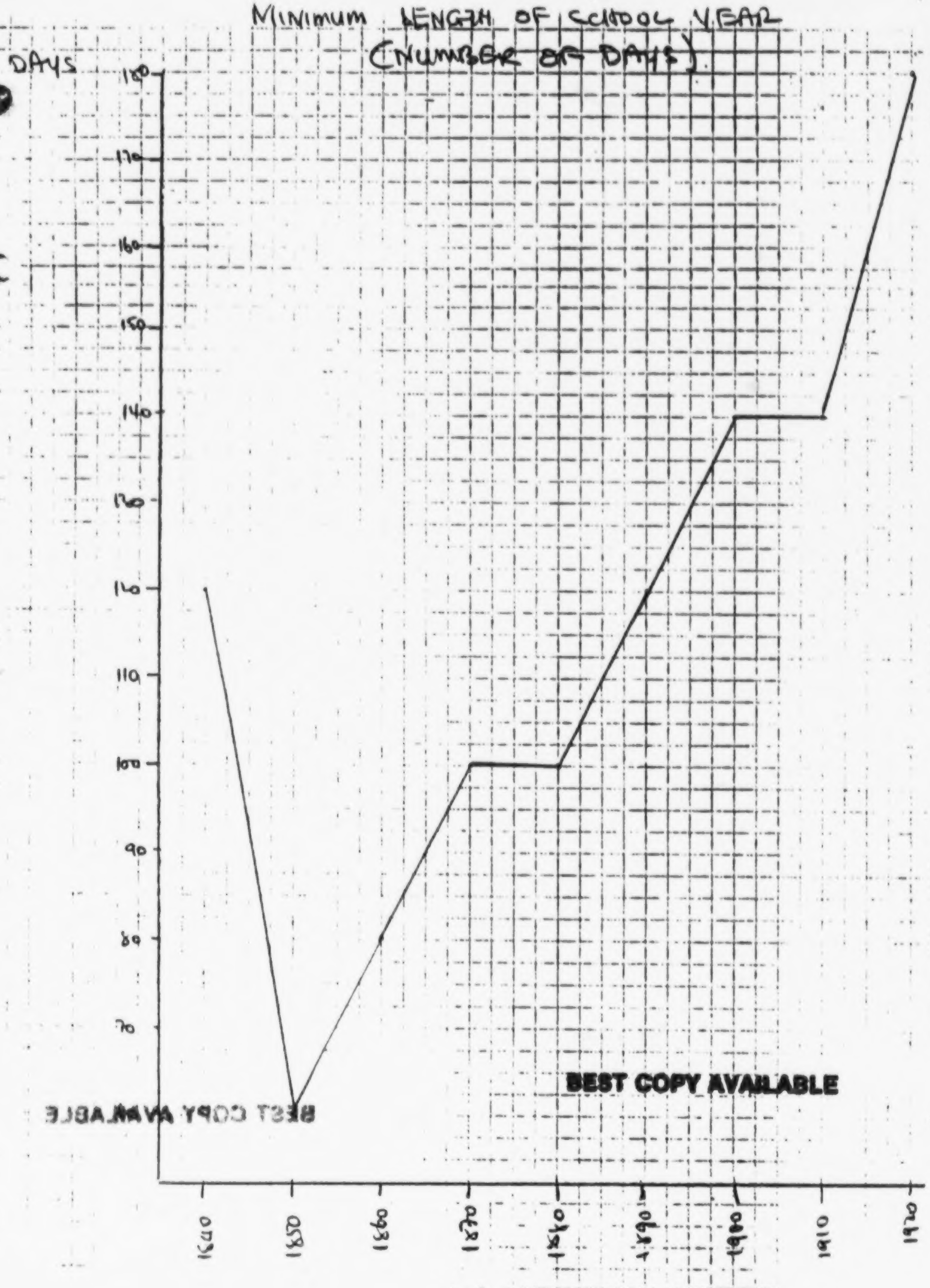

MINIMUM LENGTH OF SCHOOL YEAR

(NUMBER OF DAYS)

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Table Fourteen

YEAR	AVERAGE DAILY ATTENDANCE (PUBLIC, ASSUMED PRIVATE) (1)	MINIMUM LENGTH OF SCHOOL YEAR (# DAYS) (2)	AVERAGE NUMBER OF DAYS OF SCHOOLING PER CHILD IN PUBLIC SCHOOLS PER YEAR (A) (3)	AVERAGE NUMBER OF DAYS OF SCHOOLING PER YEAR PER CHILD AGED 0 - 19(B) (4)	AVERAGE NUMBER OF DAYS OF SCHOOLING PER YEAR PER CHILD AGED 0 - 19 IN MASSACHUSETTS (5)
1850	82.1	60	49.2	14.2	61.7
1860	86.0	80	68.8	-	63.1
1870	87.4	100	87.4	35.5	66.2
1880	89.2	100	89.2	-	71.2
1890	86.9	120	104.2	39.3	-
1900	96.0	140	134.4	52.6	-
1910	92.0	140	128.8	54.6	-
1920	86.2	180	154.8	75.0	-

(a) Calculated by multiplying (1) by (2)

(b) Calculated by multiplying total average daily enrollment (from Table Seven) by number of days of schooling and dividing by fraction of 0-19 age, cohort enrolled in public school.

number of days of schooling per capita per year for children enrolled in the public schools, for the 0-19 age cohort as a whole Philadelphia lagged far behind Massachusetts.

V. CHANGES IN THE EDUCATIONAL STOCK

Given the fact that the estimates above of per capita schooling in Philadelphia are based, in part, upon statutory minimum school year requirements and not upon actual reported length of school year as is the case for Massachusetts, an alternative measure of the intensification of schooling is desirable. One limitation of Kaestle and Vinovskis' formula is that it simply measures the average number of days of schooling a child from a given age cohort was likely to receive in any given year; it does not measure the total amount of education received by a child. For this different measures are necessary. At least two such measures seem possible: one measures the average amount of schooling per capita within a cross-sectional or artificial cohort, while the second measures the average amount of schooling per capita within a natural or longitudinal age cohort.[1]

The first measure proceeds by muliplying for each grade the number of students within each grade by the grade level, adds the totals to get the total number of years of schooling for that cross sectional age cohort, and then divides by the total number of students enrolled in the school at the end of the year. In formal statistical terms:

$$S_1 = \frac{\Sigma(Kn + 1n + 2n + . \ . \ . + 12n)}{N}$$

where S_1 = average number of years of schooling completed per capita of those attending public school at a given point in time

K, 1,2,12= school grades

n= number of students per grade

N= total enrollment

It must be emphasized that this question cannot measure changes in the average amount of schooling per capita within any particular age cohort: it does not measure the average amount of schooling of a natural cohort, or changes in the average amount of schooling received per capita of indifferent natural age cohorts across time. What it does make possible is in the educational capital or stock of different cross sectional cohorts through time: it provides an index of changes in the educational stock of different sectional cohorts at different points in time. It thus provides a useful way of indexing changes in the total amount of schooling or educational stock at different points in time. It is consequently, a far more revealing measure of changes in the level of educational achievement than provided by Koestle and Vinovskis' measure, which merely measures changes in the average amount of schooling per year. In other words, the measure developed by Koestle and Vinovskis has no function within it for incorporating changes in enrollment. The statistic above does so: it incorporates measures of both the average number of days of schooling received per year and the level of enrollment.

The equation as formulated, however, does have a number of limitations. As it stands it measures only a certain fraction of the 0-19 age cohort - namely, those attending public school. To get a measure of the average number of years of schooling per child for the 0-19 age cohort as a whole at any one point in time, it is necessary to add to the equation. Moreover, since we know that the length of the school year changed over the course of the 19th Century, we need to include a variable that measures the average number of days of schooling per child in any particular year in order to determine the average total number of days per capita of a given cross sectional 0-19 age cohort. Finally, the measure makes no allowance for repeaters: the measure as it stands underestimates the actual number of years or days of schooling completed by the overall fraction of students who repeated one or more years of schooling.

Each of these considerations necessitates some modification of the equation. First, the problem of repeaters. Since there is no data before 1900 on the number of repeaters in any one grade, there is no way to statistically control them. But it is possible to change the meaning of the statistic S from the number of years of schooling completed to the number of grades completed thus:

2. $$S_2 - \frac{\Sigma(Kn + 1n + 2n + . . . +12n)}{N}$$

Where S_2 equals average number of grades completed per capita of children enrolled in public school in a given cross sectional cohort.

Second, we need to add a term that expressed the average number of days of schooling completed per child of a given corss sectional cohort enrolled in public schools, although this statistic cannot control for the number of repeaters as does S_2:

3. $$S_3 = \left[\frac{\Sigma(kn + 1n + 2n + . . . 12n)}{N}\right]\left[A\right]$$

Where S_3 = average number of days of schooling per capita of a given cross sectional cohort enrolled in public schools

A = Average number of days of schooling per capita per year (calculated by multiplying average daily attendance by the number of school days in a school year).

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Third, the equation must be altered in order to calculate the average number of grades completed per capita for a given cross sectional age cohort as a whole, and not merely those attending public school.

$$4. \qquad S_4 = \left[\frac{\Sigma(kn + 1n + 2n\ .\ .+12n)}{N}\right]\left[D\right]$$

Where S_4 = Average number of grades completed per capita for a given cross sectional age cohort as a whole

D = Fraction of all children 0-19 enrolled in public school.

Finally, although it is impossible to calculate the average number of years or days of schooling completed because we have no data on the percentage of repeaters, it is still useful for some analytical purposes to have statistics which measure the average number of days of schooling completed by an individual within a given cross sectional cohort as a whole:

$$S_5 = \left[\frac{\Sigma(kn + 1n + 2n.\ .\ .+12n)}{N}\right]\left[D\right]\left[A\right]$$

Where S_4 = Average number of days of schooling completed by a child of a

Since the equation requires that the total number of grades completed (i.e. the total educational stock), be divided by the total N calculated from end of year enrollments from all grades, it is not necessary to add an additional term to the equation to control for drop outs during the course of the year. By dividing by the total N from end of year enrollments the equation captures all those students who finished all the relevant grades during the course of the year.

The figures reported in Tables 15-21 do, however, contain certain assumptions that are important to note. First of all, they assume that the average amount of schooling received by a child in a given cross sectional age cohort enrolled in public schools is identical to that received by a

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child in private and parochial schools. This is probably not a reasonable assumption to make for children attending either parochial or private schools, since children at parochial schools were for the most part Catholic working class, and probably attended schools for a period shorter than the mean for all children. Children attending private schools, on the other hand, in all likelihood attended school for a longer period of time than was normal. In the absence of hard evidence, however, these suppositions remain pure conjectures; in the meantime we simply have to assume similar profiles in public and non-public schools.

Second, the procedure for estimating the size of the educational stock, because it includes a measure of the number of days of schooling completed based on a calculation of the minimum number of days of schooling per year required by law and not upon the actual number of days on which school was open, is not an accurate reflection of the amount of schooling received. In fact, the procedure underestimates, by an unknown amount, the amount of schooling received. At the very best then the calculations of changes in the educational stock constitute an index of those changes and not a measure of the changes.

These are the two principal assumptions built into the index. Other assumptions are less serious. First, S_4 and S_5 assume that retardation rates are equal across all grades. Second, the figures in Table 15 from 1841 through 1880 assume that students are evenly distributed between grades within any one level, for example, between grades 1 and 2 in primary school. This assumption was not necessary for high school grades between 1841 and 1880, or for all grades for 1900, 1910, and 1920, since data for the distribution of enrollments was available, although the ratio of high school grades to each other for the year 1871 and 1880 was based on the ratio's for 1865, the last year for which figures are available before 1900. Third, the estimates in Table 15 also assume that enrollments in Consolidated and Unclassified schools are evenly distributed between grades, that unclassified schools cover grades 1-4, consolidated schools 1-6, manual training schools etc. grades 9 and 10. Fourth, Table 15 assumes that unknowns are evenly distributed across elementary school grades, and counts enrollments in infants' schools and kindergartens at half a grade. And fifth, the estimates exclude students enrolled in the Model School, the School of Practice, Combined Schools, or Night Schools.

The results of the calculations of the educational capital or stock of the cross sectional cohorts are represented in Tables 16-21. First, the number of grades completed. (Tables 18 and 19). For those enrolled in public schools, the number of grades per capita completed dropped very slightly from 2.6 grades per capita in 1841 to a low of 2.4 in 1880. Sometime between 1880 and 1900 the average began to increase, reaching 3.2 by 1900, and jumping to 4.4 in 1920. For the 0-19 cohort as a whole, the trend was somewhat different rising consistently from .53 in 1841 to .77 in 1880, increased substantially between 1880 and 1900 to 1.0, and then jumping 50% to 1.5 in 1920.

Two significant conclusions can be derived from these results. First, during Philadelphia's period of rapid industrialization between 1840 and 1880 the level of educational achievement of children in Philadelphia's public schools, as measured by cross-sectional indices of educational stock, declined slightly from 2.6 to 2.4 grades per capita for those enrolled in public school. In effect, using this measure of educational achievement industrialization

Table 15

Distribution of Students by Grade

Year	One	Two	Three	Four	Five	Six	Seven	Eight	Nine	Ten
1841	4561	4561	1298	1298	4222	4222	123	45	46	32
1851	11867	11867	3765	3765	5510	5510	266	114	83	39
1860	16563	16563	5832	5832	6633	6633	201	119	58	40
1871	19513	19513	9960	9960	6363	6363	297	143	63	62
1880	27471	27471	13138	13138	7467	7467	249	120	53	52
1890	—	—	—	—	—	—	—	—	—	—
1900	35262	27537	23393	18060	14947	9341	6201	4185	2101	1279
1910	19376	27546	26172	23914	20610	15715	11027	7602	5438	3282
1920	20904	30018	27701	26782	25712	23390	19087	13696	10287	5866

Table 15 (cont'd)

Eleven	Twelve	Infant Kindergarten	Unclassified Consolidated	Continuation Manual Training Trades	Junior High Schools
		267	6347		
			3347		
			8299		
			7630		
776	319	7405			
2039	821	4270			
3577	2421	3845			1625

Table 16

Percentage of School Enrollment by Grade

Year	First	Second	Third	Fourth	Fifth	Sixth	Seventh	Eighth	Ninth	Tenth	Eleventh	Twelvth
1841	.16	.16	.04	.04	.15	.15	.004	.001	.001	.001		
1851	.25	.25	07	.07	.11	.11	.005	.002	.001	.0008		
1860	.26	.26	.09	.09	.10	.10	.003	.001	.0009	.0008		
1871	.24	.24	.12	.12	.08	.07	.003	.001	.0007	.0007		
1880	.26	.26	.12	.12	.07	.07	.002	.001	.0004	.0004		
1890	—	—	– –	—	—	—	—	—	—	—		
1900	.23	.18	.15	.14	.09	.06	.04	.02	.01	.008	.005	.002
1910	.11	.16	.15	.14	.12	.09	.06	.04	.03	.01	.01	.004
1920	.09	.13	.12	.11	.11	.10	.08	.06	.04	.02	.01	.01

Table 17

Grades Completed in Public Schools: Grade Level by Aggregate Enrollment

Grade Level

Year	One	Two	Three	Four	Five	Six	Seven
1841	4671	9342	3895	5194	21112	25335	861
1851	11867	23735	11295	15060	27552	33062	1862
1860	16563	33126	17497	23330	33165	39798	1407
1871	19513	39026	29881	39842	31817	38181	2079
1880	27471	54942	39414	52552	37335	44802	1743
1890	—	—	—	—	—	—	—
1900	35262	55074	70176	72240	74735	56046	43407
1910	19376	55092	78516	95656	103050	94260	77189
1920	20904	60036	83103	107128	128560	140340	133609

Table 17 (cont'd)

Eight	Nine	Ten	Eleven	Twelve	Infant Kindergarten	Unclassified Consolid Other
360	414	320			133	15860
912	747	390				13421
952	522	400				
1144	567	620				29043
960	477	520				26691
—	—	—				
33480	18909	12790	8536	3828	370	
60816	48942	32820	22429	9852	2135	4896
109568	92583	58660	39347	29052	1922	

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*Manual training, continuation and trades schools.

Table 18

Average Amount of Schooling Completed by Cross Sectional Cohort Enrolled in Public School

Year	I Total Number of School Grades Completed	II Enrollments of Relevant Grades	III Average Number of Grades Completed Per Capita Within a Given Cross Sectional Cohort	IV Average Number of Days of Schooling Per Child Per Year	V Average Number of Days of Schooling Completed Per Capita Within a Given Cross Sectional Cohort Enrolled in Public School
1841	71504	27305	2.6	—	—
1851	126482	48056	2.6	49.2	127.9
1860	166760	63195	2.6	68.8	178.8
1871	202670	80545	2.5	87.4	218.5
1880	260216	104352	2.4	89.2	214.8
1890	—	—	—	104.2	—
1900	484853	151455	3.2	134.4	430.0
1910	705029	168906	4.1	128.8	528.0
1920	1004812	226130	4.4	154.8	681.1

Table 19

Year	Percentage of All children 0-19 in Public School	Average number of grades completed per capita within a given cross sectional 0-19 age cohort (S_4)	Average number of days of schooling per capita within a given cross sectional 0-19 age cohort (S_5)
1841	.204	.53	—
1851	.259	.67	32.8
1860	.281	.73	50.2
1871	.303	.75	66.2
1880	.324	.77	69.5
1890	.291	—	—
1900	.318	1.0	136.7
1910	289	1.2	154.5
1920	.351	1.5	239.0

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Table 20

Percentage Increases

	Public School Cohort			0-19 Age Cohort		
Year	Grades Completed	Days of Schooling	% of 1920 figure	Grades Completed	Days of Schooling	% of 1920 figure
1841	—	—	—	—	—	—
1851	0	—	18.7	26.4	—	13.7
1860	0	39.7	26.2	8.9	53.2	21.0
1870	-3.8	22.4	32.0	2.7	31.8	27.6
1880	-4.0	- 1.6	31.5	2.6	4.9	29.0
1890			(47.3)			(44.0)
1900	33.3	100.1	63.1	30.0	96.6	57.1
1910	28.1	22 7	77.0	20.0	13.1	64.6
1920	7.3	28.9	100 0	25.0	54.9	100.0
1850-1920	69.2	432.5		183.0	628.6	
1850-1880	-7.6	67.9		48.0	113.8	
1880-1920	83.3	217.0		94.8	243.8	
1900-1920	37 5	58.3		50.0	74.8	
1880-1900	33.3	100.1		77.0	96.6	
1870-1920	57.1	178.3		63.0	222.5	

Table 21

Annual Percentage Growth Rates

	Public School Enrollment	Total School Enrollment	Number of Days of Schooling Per Capita: Cross Sectional Public School Cohort	Number of Days of Per Capita: 0-19 Cross Sectional Cohort
1820 - 1920	3.8	3.1 (1840-1920)	—	—
1820 - 1850	7.5	—	—	—
1820 - 1870	5.6	—	—	—
1850 - 1880	2.6	2.5 (1850-1890)	1.8	2.6
1850 - 1900	2.3	2.5	2.5	2.9
1870 - 1920	2.1	2.1	2 3	2.6
1900 - 1920	2.1	2.5	2.3	2.8
1880 - 1900	1.8	—	3.5	3.9
1850 - 1920	2.2	2.5	2.4	2.8
1880 - 1920	1.9	—	2.9	3.1

was associated with a decline, not an increase, in the level of educational achievement. Results consistent with this have been reported by Katz and Dewey in their study of Hamilton, Ontario. Using individual level data, they estimate that between 1851 and 1871 the proportion of children aged 13-16 increased between 1851 and 1861 but declined between 1861 and 1871, a trend they attribute to the expansion in the number of jobs available to young people in the early stages of industrialization. Something similar to this might well have occured in Philadelphia, but the results reported above for Philadelphia are also due in part to a change in the distribution of enrollments within public schools between 1840 and 1880. As the data in Table 16 indicates, the percentage of children in the higher grades, particularly in the grammar schools, dropped after 1841, while the percentage of those enrolled in the primary and secondary grades increased. Since the equation weighs the upper grades much more heavily than the lower grades, the gradual clustering of enrollments at the lower end of the school system was not able to push up the educational capital of cross sectional cohorts after 1841 until after 1890 when the distribution of enrollments again shifted toward the upper levels of the school system. The net effect of the shift between the 1840's and 1880 is clear however, although it is certain that the concentration of enrollments in the lower grades lowered, even if only slightly, the educational stock of cross sectional cohorts between 1840 and 1880.

When attention is shifted, however, from those children attending public school to the 0-19 age cohort as a whole, the data seems to suggest a very different conclusion. For the various 0-19 age cohorts as a whole between 1840 and 1880, the educational stock increased, from .53 to .77. But this result was not due to the fact that children were, on the average staying on at school longer, but rather, because the proportion of the 0-19 cohort attending school increased, from .204 in 1841 to .324 in 1880. It appears then that for both children attending public school and for those of the 0-19 age cohort attending other schools, industrialization was associated with a decline, and not an increase, in the level of educational achievement.

Second, the data in the Tables clearly colloborate the impression gained from evidence considered earlier that an educational "takeoff" took place during the 1890's, and accelerated dramatically between 1910 and 1920. Moreover, the data in Tables 18-21 confirm the earlier impression from an examination of the distribution of enrollments that the take-off had two dimensions: a rapid increase in the number and proportion of children attending school, and a lengthening of the period of schooling itself. How much this was the case is even more apparent after examining the pattern of growth of the number of days of schooling per capita between 1851 and 1920.

For the public school cohort, overall between 1850 and 1920, the number of days at school increased from 127.9 to 681.1, an absolute increase of 432.5% or an annual growth rate of 2.4%. Easily the largest increases took place between 1880 and 1900 - from 214.8 to 430, an increase of 215.2 days - and between 1900 and 1920 when it jumped from 430 to 681.1, an increase of 251.1 days. Altogether, the annual growth rate between 1880 and 1900 was 3.5%, a very high growth rate, while between 1900 and 1920 it was even higher, 3.9% for the 0-19 age cohort as a whole, the number of school days completed jumped from 32.8 to 239, an absolute of 628.6%, or an annual growth rate of 28%. As with the public school cohort, the largest increases took place between 1880 and 1900, and between 1910 and 1920.

These figures, however, do not fully capture the significance of the growth spurts between 1880 and 1950 and 1910 - 1920. Calculating the increases on a percentage of the 1920 figure provides a measure of the relative significance of different decades. For public school students, between 1881 and and 1880 the index increased less than 13 points, from 18.7 to 31.5.

Between 1880 and 1900, however, the index increased 32 points, from 31.5 to 63.1. The decade between 1910 and 1920 exhibited an even stronger growth rate, jumping 22.5 points. For the 0-19 age cohort as a whole, between 1851 and 1880 the index barely increased 15 points from 13.7 to 29.0; but between 1880 and 1900 it increased 28 points to 57.. and between 1910 and 1920 a spectacular 35.4 points.

As with the enrollment and enrollment distribution figures, the data on school attainment point directly to the last years of the 19th Century and the second decade of the 20th as the key decades of educational expansion. From around 1890 on children went to school in much greater numbers, in greater proportions, and stayed much longer. All three aspects of this revolution in edicational behavior are significant, but the one that really stands out is the growth in the total amount of schooling received by Philadelphia's children. Between 1880 and 1900 the amount of schooling received grew by a phenomenal 3.9% p.a. dwarfing the growth rate of enrollments. Between 1900 and 1920 it grew at a slower rate (2.8% p.a.), but it still easily managed to be the most impressive index of change in educational behavior. As important as the expansion of enrollments was, the increase in the size of the educational stock seems even more so.

VI. EDUCATIONAL ATTAINMENT

There remains one final measure of the expansion of schooling to consider. It too relies on a similar procedure of estimating the total number of grades completed for the 0-19 age cohort. But instead of estimating the educational stock of a cross sectional or artificial cohort, it measures the educational achievement of a natural or longitudinal age cohort. It proceeds by computing the total number of grades completed by a natural age cohort through time. Thus, for example, for the 0-19 cohort that started school in 1841, it estimates the total number of grades accumulated by the age cohort as it proceeded through school between 1841 and the time the final students graduated from high school in 1850. By dividing the total number of grades completed by the total number of students in each successive grade, an estimate of the amount of schooling per capita can be arrived at.

1.

$$E = \frac{\sum(kn^{t} + 1n^{t+1} + 2n^{t+2} + . \; . \; . +12n^{t+12})}{N}$$

Where E = Total amount of schooling received per capita of a natural age cohort.

k,1 2 etc. = Grade levels.

n = Numbers in grade

t,t+1,t+2 = Base year that cohort commenced school and following years.

N = Total numbers of students in all grades.

As with the cross sectional short analysis, it is necessary to amend the meaning of the statistic to allow for repeaters.

2. $$E_2 = \frac{\sum(kn^t + 1n^{t+1} + 2n^{t+2} + \ldots 12n^{t+12})}{N}$$

Where E_2 = Number of grades completed per capita of children enrolled in public school of a given natural age cohort.

A similar statistic is necessary for all children of the 0-19 age cohort, and not merely those attending public school:

3. $$E_3 = \left[\frac{\sum(kn^t + 1n^{t+1} + 2n^{t+2} + \ldots +12^{t+12})}{N}\right]\left[D\right]$$

Where E_3 = Average number of grades completed per capita for a given age cohort.

D = Fraction of all children originally enrolled in school.

Estimating the number of school days completed, however, is a more complex matter than the formula for the cross section cohort index, since the length of the school year changed periodically. For public school students the formula becomes:

4. $$E_4 = \frac{\sum(kn^t a + 1n^{t+1} b + 2n^{t+2} c + \ldots 12n^{t+} m)}{N}$$

Where E_4 = Number of days of schooling completed per capita by children enrolled in public school.

$a, b, c \ldots m$ = Number of school days in year t, $t+1$, $t+2 \ldots t+12$.

And for the 0-19 age cohort as a whole:

5. $$E_5 = \left[\frac{\sum(kn^t + 1n^{t+1} a + 2n^{t+2} b + \ldots 12n^{t+12} m)}{N}\right]\left[D\right]$$

Where E_5 = Number of days of schooling completed per capita by all children 0-19.

As with the procedure for estimating changes in educational stock, the procedure for estimating changes in the level of educational attainment also involves using a measure of the number of days of schooling per year that underestimates, by an unknown amount, the actual number od days that schools were open. At best then the procedure for estimating changes in the level of educational attainment is not a measure but an index of such changes that underestimates, but an unknown amount, the actual amount of schooling received per year. However, the statistics produced by E_3, which produces a measure, and not an index, of the average number of grades completed per capita for a given cohort, does provide a valid measure of changes in the level of educational attainment. The tables that follow include both the index for number of days of schooling received and the measure of grades completed.

Changes in the level of school achievement of successive natural age cohorts entering school at 10 year intervals between 1841 and 1921 are reported in Tables 22-26. The data in Table 24 indicate that the pattern of educational achievement was remarkably similar to the pattern for the cross sectional cohorts, although in general the level of educational achievement for the natural cohorts was slightly higher than for the cross sectional cohorts. In part this can be accounted for by the fact that the cross sectional index doesn't take into account girls enrolled at the Normal School, and later Girls' High School, before 1900. But since the numbers involved are quite small, they would not account for all of the difference.

Tables 22 & 23 contain an anomaly for which I have no verifiable explanation but which has some effect on the estimates of grades completed and days of schooling received for the 1851, 1861, 1871, 1911 and 1921 cohorts. For each of these cohorts the number of students that enrolled in grade 2 was higher than the number of students that enrolled in grade 1. In and of itself this does not affect

Table 22

School Enrollment by Grade Level

	Entering Year							
Grade	1841	1851	1861	1871	1881	1901	1911	1921
1	5694	12014	17444	21504	28359	35124	19059	22559
2	4964	12408	17928	21703	27435	28292	27532	31784
3	2368	3505	6457	10872	13460	25172	26675	29250
4	2607	3645	6642	12510	14510	21036	24827	28727
5	5529	6029	6830	7546	8927	17672	23373	27764
6	5620	6060	6173	7738	8190	12328	21004	25643
7	286[b]	320[b]	407	747	1099	7056	16866	13578
8	176[b]	186[b]	220	348	528	5465	12198	8688
9	69	76	112	161	232	6002	9708	7792
10	41	50	60	160	232	3282	5886	10571
11						2232	4025	7648
12						989	3106	6654
Total	27354	44293	62273	83289	102972	164653	194259	220665

TABLE 23

GRADES COMPLETED

GRADE LEVEL BY GRADE ENROLLMENT

Grade	1841	1851	1861	1871	1881	1901	1911	1921
1	5694	12014	17444	21504	28359	35124	19,059	22559
2	9928	24816	35848	43406	54870	56584	55,064	63568
3	7104	10515	19371	32616	40380	75516	80,025	87750
4	10428	14580	26568	50040	58040	84144	99,308	114,908
5	27645	30145	34100	37730	44635	88360	116,865	138,820
6	33720	36360	37038	46428	49140	73968	126,024	153,858
7	2002	2240	2849	5529	7693	49392	118,062	95,046
8	1408	1488	1760	2784	4224	43720	97584	69,504
9	621	684	1008	1449	2088	54018	87372	70,128
10	410	500	600	1600	2320	32820	58860	105,710
11						24552	44275	84,128
12						11868	37272	79,848
TOTAL	98960	133342	176586	243086	291748	630066	939770	1085827
Per capita	3.6	3.0	2.9	2.9	2.8	3.8	4.8	4.9

TABLE 24

Per Capita School Achievement of Natural Age Cohorts

Age Cohort Entering School	Grades Completed Per Capita	Grades Completed Per Capita	Days of Schooling Completed Per Capita	Days of Schooling Completed Per Capita
1841	3.6	.73	---	---
1851	3.0	.77	147.6	37.8
1861	2.9	.81	199.5	55.7
1871	2.9	.87	253.4	76.0
1881	2.8	.90	249.7	80.1
1891	---	---	---	---
1901	3.8	1.20	510.7	161.3
1911	4.8	1.38	618.2	177.7
1921	4.9	1.71	758.5	264.7

TABLE 25

Age Cohort Entering School	Grades completed: Public School students as a % of 1921 cohort figure	Grades completed: 0-19 cohort as a % of 1921 cohort figure	Days of Schooling completed: Public School students as a % of 1921 cohort figure	Days of Schooling completed: 0-19 cohort as % of 1921 cohort figure
1841	73%	42%	—	—
1851	61%	45%	19%	14%
1861	59%	47%	26%	21%
1871	59%	50%	32%	28%
1881	57%	53%	32%	30%
1891	—	—	—	—
1901	77%	70%	67%	60%
1911	87%	80%	81%	65%
1921	100%	100%	100%	100%

TABLE 26

PER ANNUM GROWTH RATES

	Days of Schooling completed per capita: Public Schools	Days of Schooling completed per capita 0-19 Age Cohort
1851 - 1881	1.76	2.53
1851 - 1901	2.51	2.94
1871 - 1921	2.21	2.52
1901 - 1921	1.99	2.50
1851 - 1921	2.36	2.81
1881 - 1901	3.64	3.56
1881 - 1921	2.81	3.03

the procedure for estimating the number of grades or days of schooling completed, but it does raise a question about the reliability of the figures upon which the estimates are based, and therefore in the estimates themselves. It is possible that at the beginning of grade 2 more children enrolled than had been enrolled the previous year in grade 1, but why this should happen is not immediately obvious.

Despite the slight difference in the overall level of school achievement on the two indexes, the direction and relative magnitude of the changes between cohorts are exceptionally close. This holds true of both measures of educational achievement: grades completed and number of days of schooling completed. The remarkable similarity of the various measures is particularly apparent if one compares the figures expressed as a percentage of the 1920 level in Table 20 and 25. In most instances, the differences are rarely more than 1% in size.

Apart from the remarkable similarity of the cross sectional and longitudinal measures of educational achievement, they also agree on two further points: a decline in the level of educational achievement, as measured by grades completed, between 1840 and 1880, followed by a period of sustained growth after 1880. The decline in educational achievement between 1840 and 1880 in the longitudinal index is, however, much steeper than the decline in the cross sectional index. Whereas the decline in the former was from 3.6 to 2.8, in the latter it was from 2.6 to 2.4. The relative magnitude of the the increases after 1880 are, on the ohter hand, very similar, increasing from 2.8 to 4.9 in the case of the longitudinal index, and from

2.4 to 4.4 in the case of the cross sectional index.

As with the cross sectional figures on the 0-19 age cohort as a whole, the persistent increase in the level of educational achievement between 1841 and 1880 of the 0-19 age cohort as a whole seems to contradict the conclusion that industralization was associated with a decline in the level of educational achievement. But as with the cross sectional figures, this increase does not represent an increase in the length of time children stayed at school but an increase in the proportion of the 0-19 age cohort attending school. On both indices of grades completed then, the cross sectional and the longitudinal, industrialization in Philadelphia was associated with a decline in the number of school grades completed.

EXPLANATIONS THAT DON'T EXPLAIN

This analysis of aggregate enrollments suggests a number of significant empirical results:

(1) That the common school reform movement had a considerable and direct impact upon the level of school enrollments although its impact upon the amount of schooling per child has yet to be determined.

(2) That between 1840 and 1920 the number of children 0-19 attending public schools and schools generally increased by a multiple many times over, and that during the same period the proportion of all children 0-19 attending school gradually increased from 22.1% in 1840 to 48.3% in 1920. The proportion of these children enrolled in public schools declined however, from 92.4% in 1840 to 72.6% in 1920.

(3) That between 1840 and 1920 the distribution of students grade level changed twice, the first time (between 1841 and 1890) shifting

way from the grammer schools toward the primary and secondary schools, and the second time, after 1890, shifting back toward a more balanced distribution across grade levels. Indeed, in the years after 1890 the major increases in the level of enrollments was not in the lower but the upper grades: in effect, children were staying at school longer.

(4) That average daily attendance increased between 1840 and 1900: thereafter it declined. The reasons for this are not apparent.

(5) That the average number of grades completed per capita declined slightly between 1840 and 1880 and then rose rapidly after 1880 or 1890, as measured by both the cross sectional and the longitudinal measures of educational attainment. This finding suggests that insofar as the average age that children started school did not decline between 1840 and 1880 and did not increase after 1880, the average age at which children left school and presumably started work between 1840 and 1880 declined and after 1880 increased.

(6) That minimum number of days of schooling per year mandated by the state increased 3 fold over the course of the 19th Century from three months in 1850 to nine months in 1911. Consequently, the average amount of schooling per year per capita increased from 49.2 for those in public schools and 14.2 for the 0-19 age cohort generally to 154.8 and 75.0 respectively. Since these figures are based on the minimum number of days per year mandated by the state, they undoubtedly underestimate the actual number of days of schooling per year in Philadelphia are to that extent, a less reliable index of changes in educational achievement than grades completed.

(7) That from a number of indicators - grades and days of schooling completed, distribution of students by grade, and the numbers and proportion of children attending school - it is apparent that while the decade after

the passage of the 1836 school law witnessed a dramatic increase in the level of school enrollments, an educational "take-off" did not take place before 1880 or 1890. The golden era of school enrollment and achievement began not in the late 1830s but approximately between 1880 and 1900.

These then are the principal findings of the aggregate analysis of school enrollment and achievement in Philadelphia for the century beginning in 1820. The task now is to link these findings with other social changes that took place during the same time period. The growth of enrollments, the changing distribution of enrollments, and the distinctive-and intriguing-pattern of educational achievement did not take place in a social vacuum. Between 1820 and 1920 a great many social changes -- some of them of considerable significance took place in Philadelphia: the triumph of a system of wage labor, industrialization and the transformation of the organization of work, the reorganization of the structure of social space and urban patterns, rapid population increases, large scale immigration, and institutional development and differentiation, to name but the most prominent. It would be surprising indeed if the various measures of education expansion described earlier were not in some way related to these basic structural changes in social organization in Philadelphia.

That these developments are related is hardly controversial but there is little agreement about how these developments are related, despite several decades of theoretical debate among economists, historians and sociologists. As noted earlier, the three principal perspectives currently employed are those derived from modernization theory, Weber's theory of status competition and Marxist theorist of class conflict.

Perhaps the most influential theoretical perspective on the expansion of schooling is derived from modernization theory. As noted earlier, the explanation of educational enrollments provided by modernization theory is a demand side "human capital" market model which hypothesizes that changes in the structure of employment or in the structure of the economy "require" a more highly educated labor force. Yet apart from the fact that such models provide no account of the mechanism linking occupational requirements and school enrollments - one presumes that they assume the self-evident existence of a human capital market - there are a number of additional difficulties with such a model. Two in particular stand out. The first is the reliance of modernization theory upon a human capital explanation of technology and increasing skill requirements as the primary source of the expansion of schooling; and second, one step further back, the dependence of modernization theory upon a neoclassical theory of production and the nature of the firm.

First, the reliance of modernization theory upon technology and increasing skill requirements. The basic argument is derived from human capital theory:: a growing demand for skilled labor increases the individual returns to investment in education. Other things being equal (direct and opportunity costs), the demand for education rises. The theory assumes that changes in the mix of goods and services and in technology produce an increased demand for skills or educated labor. This increase in demand leads to a rise in the wage of educated workers, which produces, in turn, an increase in the incentive to invest in schooling, leading to greater voluntary enrollments.

To the extent then that human capital or market mechanism operated, we would expect to observe increases in per capita employment in occupational categories associated with high levels of schooling, and perhaps increases in skill requirements within certain categories or sectors. This exception rests on the further assumption that production processes provided relatively few opportunities for substitution among workers with different amounts of education (what economists call"low substitution effects"). Given this assumption, observed shifts in employment would indicate underlying shifts in the demand for labor. Likewise, the argument that skill requirements increased as a result of industrialization could be measured through (a) observing whether industrialization did in fact require more skilled workers, and (b) observing whether the shift to capital intensive techniques in fact increased the average level of skill required of industrial workers.

Most, but not all, of these claims can be tested against the data presently available for Philadelphia. Take first the demand for skilled labor. This can be measured by comparing changes in the occupational distribution of workers in the economy. In 1850 slightly under half (49.8%) of the total labor force were skilled land workers in the trades; by 1930 that figure had almost halved (25.5%). By 1950 it had dropped to 14.0%. Meanwhile, the percentage of semi-skilled and unskilled workers in all industries excluding those in white collar jobs had increased from 22.4% in 1850 to 42.4% in 1930 and 46.0% in 1950. Including all white collar workers as well does not alter the picture. Excluding those workers for whom skill level is unknown and professionals, manufacturing officials and merchants, and including clerical workers among skilled workers in 1850 but semi skilled in 1930 and 1950, the proportion of skilled workers in the entire labor force for whom skill levels are known dropped from 53.5% in 1850 to 25.5% in 1930 and 14.0% in 1950, while the percentage of semi-skilled and unskilled workers increased from 22.4% in 1850 to 57.1% in 1930 and 69% in 1950. (Table 27).

The same trends can also be expressed in terms of the changing ratio between skilled workers on the one hand to semi-skilled and unskilled workers on the other in the manual trades (that is, in manufacturing, building and construction and transportation) in 1850 and 1930. In 1850 the ratio was 2.5 to 1. By 1930 the ratio had switched to 1 to 1:4. By 1950 it was exactly the reverse of the 1850 figure: 1 to 2.5. In effect, the skill level of the typical worker in the various trades in 1930 was less than it was in 1910, and less in 1910 than it was 1880, and less in 1850 than it was in 1850.

Faced with this evidence, the apologist of modernization theory might insist that although the modern worker is less skilled, he is nevertheless more productive since he has the opportunity to use more sophisticated machinery than earlier generations of workers. Yet there is some evidence, adduced by Laurie and Schmitz in their study of industrialization in Philadelphia between 1850 and 1880, that contradicts even this argument. The counter argument builds upon two of Lauri and Schmitz' findings. The first is not controversial or surprising: whereas in 1850 12.4% of workers were employed in small firms of 1-5 employees. by 1880 that figure had been reduced to 7.0%. The percentage of employees employed in firms employing over 51 workers, however, increased from 43.1% to 65.9%. (Laurie and Schmitz, 12) In 1850 only 8% of the workforce worked in plants of 300 or more; by 1880 that figure had jumped to 22% and by 1927 48%. (Erickson and Yancey bb).

Table 27

Occupational Distribution by Skill Level, 1850 - 1950

	1850[1]	1880[2]	1910[3]	1930[4]	1950[5]
White Collar	21.6	24.2	28.2	32.1	40.0
Professional, Merchants, Manuf. Officials	8.7	11.5	10.7	13.3	17.0
Clerical	3.7	4.6	5.9	8.8	17.0
Sales		3.2		5.9	6
Other	9.3	—	11.6	4.1	—
Skilled Hand Trades	49.8	40.7	27.1	25.5	14.0
Manufacturing	37.5	36.8		21.1	
Building & Const.	9.4	3.9		4.4	
Other	2.9			—	
Unskilled & Semi Skilled	22.4	30.2	41.2	42.4	46.0
Dom. & Personal Service	3.0	3.1		6.7	12.0
Manufacturing	18.0	27.1		16.3	28.0
Building & Const.				2.8	
Other	1.4			5.7	6.0
Transportation	—			10.9	
Other	6.2	4.9	3.5	—	—
N	96930	227652	510281	643714	825,000

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[1] From PSHP Multi ethnic Files

[2] ibid

[3] From published census data

[4] From Erickson & Yancey, Appendix Table 1

[5] From G Palmer *Labor Mobility in Six Cities* (NY: 1954) 26

Table 28

PERCENTAGE OF EMPLOYEES BY FIRM SIZE

Year	1 - 5	6 - 25	26 - 50	51+	Total
1850	12.4	28.4	16.1	43.1	150
1860	10.0	22.1	13.6	54.3	150
1870	8.7	19.6	14.0	57.7	100
1880	7.1	15.1	11.9	65.9	100

Source: Laurie and Schmitz, p. 12

Their second finding however, is much more surprising: contrary to what neoclassical economic theory predicts, increasing firm size did not necessarily bring about economies of scale or increased labor productivity. Between 1850 and 1880, as artisan shops, manufacturers and small factories employing skilled workers and employing little or no mechanical power were replaced by large mechanized factories, labor productivity diminished. Economies of scale did not appear as the average size of the workplace increased: proportional increases in inputs did not lead to equivalent expansion in output. The increased application of power did increase labor productivity, but when Laurie and Schmitz held power constant in their regression equation, value added per worker declined with size in most industries. "Scale", they conclude, "was a liability in non-mechanized as well as in mechanized shops." (45)

It is clear then that in manufacturing not only did the proportion of skilled workers decline over time, but that labor productivity declined as well. Yet this occurred following a period (1820-1850) in which enrollments had increased 795% or at an annual rate of 7.5%) and during a period (1850-1880) in which enrollments increased 119.6% or at an annual rate of 2.6%. At the same time, the average number of days of schooling per child per annum in public schools increased at a minimum from 49.2 in 1850 to 89.2 in 1880, and for the 0-19 age cohort as a whole, from 14.2 to approximately 37. In effect, the relationship between school enrollments and the amount of schooling per child per annum on the one hand, and the demand for skilled labor on the other is exactly the reverse of what the "occupational requirements" argument posits.

Moreover, there appears to be no direct connection between mechanization, the demand for skilled labor, and school enrollments. It is certainly true, as Laurie and Schmitz demonstrate, that between 1850 and 1880 the percentage of firms and the percentage of firms' employees using mechanical power increased quite dramatically: the percentage of workers in firms using power increased from 27.6% in 1850 to 63.5% in 1880 (Philadelphia, 49), while the mean capitalization of firms by industry increased from $7,078 to $18,442, an increase of 161% (ibid 60). It is also true that enrollments and the amount of schooling per child, per annum also increased during the 1850-1880 period, and in the succeeding thirty-year periods. Yet these measures of educational expansion do not seem to be linked to the mechanization of Philadelphia's industry, at least in the manner hypothesized by modernization theory. For the occupational requirements argument to hold, mechanization would need to be linked to enrollments via the demand for skilled labor. But as we have seen, the evidence indicates that mechanization did not increase the demand for skilled labor (although mechanization itself might have been in part a consequence of a shortage of skilled labor) and although, other things being equal, mechanization might have resulted in improved labor productivity. In Philadelphia, however, other things were not equal, since firms not only mechanized but expanded in size, resulting in significant losses in labor productivity. As a consequence, mechanization was associated with neither an increased demand for skilled labor nor increased labor productivity.

What is true of the relationship between educational enrollments and occupational requirements is undoubtedly also true, ipso facto, for the other measures of educational expansion. If occupational requirements cannot explain the expansion of enrollments there is no reason to assume that they could also explain the intensification of schooling, increases in the educational stock, or the level of educational attainment, particularly since enrollments contribute an important part of the measures of both educational stock and educational attainment.

Evidence from other studies provides further support for these general conclusions concerning the relationships between educational expansion and occupational requirements. Several scholars have pointed out, for example, that for the country as a whole for both the 19th and 20th Centuries, the expansion of schooling far exceeds the expansion of the occupational structure; moreover, for particular occupations the expansion of the amount of schooling "required" of those occupations often greatly exceeds the expansion of the size of the occupations themselves. (Collins, Field, Folger and Nam).
To take but one example: there is persuasive evidence that in manufacturing, the demand for and the proportion of skilled labor in the labor force has diminished over time. For the 19th Century, Dewley, Faler, Laurie, Hersch, Walkowitz, Cumbler and the Griffiths in separate studies have all reported such a trend. Similar evidence for the late 19th and 20th Centuries has been

published by Brodv, Stone, Ozanne, Bright, Braverman, Hogan, Weyl and Sakolski, Paul Douglas, Collins, the Lynds, Erickson and Yancey, and Robert Dreeben. Given the fact then that the expansion of enrollments far exceeds the expansion of the occupational structure for the country as a whole, at the very best the "occupational requirements" argument would explain only part of the expansion of the schooling.

Moreover, there is some evidence, collected and analyzed by Folger and Nam, that only 15% of the increase in the educational attainment of the U. S. mail white labor force between 1940 and 1960 could be attributed to shifts in the occupational structure (that is, as a consequence of an increase in the demand for skilled labor) and that the remainder of educational upgrading had occurred within job categories. Changes in the level of schooling among employed white males between 1940 and 1960 could not, in other words, be attributed to changes in the structure of employment but to the fact that occupations at the same level simply "attract" more people with higher levels of educational attainment. Only among college graduates did Folger and Nam find greater shifts between than within occupations, leading them to conclude that human capital arguments linking technical job requirements with schooling apply only at the highest levels of the occupational structure, and even then not always.

Other evidence is consistent with these conclusions. Evidence reported by Berg and Collins separately suggests that the skill requirements of many jobs in the economy are significantly lower than the educational requirements. There is also persuasive evidence, analyzed initially by James Bright and later re-analyzed by Harry Braverman, that while technological change has created many new jobs, most of these jobs have low skill requirements. Only a few require substantial knowledge or technical training: most require unskilled monitoring jobs. Highly complex equipment does not usually need highly skilled operators, since the skills are built into the machines themselves.

As Bright concluded, contrary to his initial presuppositions, "there was more evidence that automation had reduced the skill requirements of the operating labor force, and occasionally of the entire factory force, including the maintenance organization." Finally, there is some evidence to suggest that most clerical jobs have either undergone considerable skill dilution or require only low levels of skill. Such jobs account for the greatest proportion of the expansion in the occupational structure of the labor force since 1900. Since 1960, for example, the white collar group of workers has expanded by 15 million people, but about four-fifths of this was in sales and clerical jobs, for most of which completing high school was not necessary although perhaps required

The array of evidence confronting the "occupational requirements" component of the explanation of school enrollments thus seriously undermines the explanation of the expansion of school enrollments proposed by modernization theorists, although as I shall discuss later, other components of modernization theory remain, in principle, capable of offering alternative explanations from within a modernization perspective.

Given these conclusions, one might argue, along lines mapped out by Bowles and Gintis that it was not so much the demand for skilled labor that generated increased enrollments and longer school years, but the growth of manufacturing employment or wage labor per se. The argument here is quite different from that posed by modernization theory: the argument is not that occupational changes "required" a more educated force, but that the growth of manufacturing and wage labor generated fears among elites and reformers that a workforce denied exposure to schooling would not accept the industrial discipline of the capitalist labor process and that such a labor force posed a threat to the economic prerogatives of capital and the stability of the political order.

In support of such an interpretation, two arguments might be advanced. The first is an argument concerning the purposes of public schooling, viz. that elites and reformers looked to schooling to socialize and habituate the future workforce to its "responsibilities" in the workplace and political society. And certainly it is at least arguable that there is evidence to support a "work discipline" or "social control" perspective, although I'm not convinced of the validity of most revisionist interpretations of reform ideology. But be this as it may, the more important point is that revisionist historians have yet to provide a convincing account of the process through which school reformers and elites were able to translate their fears and anxieties into higher school enrollments. That is, they have yet to provide an account of the mechanism that links reform ideology and school enrollments.

The one mechanism that might possibly explain the growth of enrollments is compulsory education legislation, but no such legislation was enacted until 1895 in Pennsylvania, by which time enrollments had increased some 2358.5% over thier 1820 figure and 469.1% over their 1840 figure, or at an annual growth rate of 4.3% between 1820 and 1895, compared to an annual growth rate of 2.3% after 1895. Moreover, compulsory education does not seem to have increased the percentage of the 0-19 age cohort in school in any consistent fashion.. In 1890, 29.1% of all children 0-19 were enrolled in school; by 1900, some five years after the passage of the 1895 compulsory education act, the percentage had increased to 31.8%, an increase of 2.7%. (Table Five) But 10 years later the percentage had dropped to a level (28.9%) lower than the 1890 level, even though in the interim, in 1901, a much more stringent compulsory education act than the 1895 act had been passed.

The second argument is quantitative in character. It might be argued for example, that of all the social indices against which school enrollments might be compared and correlated, manufacturing employment is one of the strongest. As the figures in Tables 29 and 30 indicate, the magnitude of the increases in manufacturing employment are quite comparable to the expansion of enrollments. Overall, between 1820 and 1920 enrollments expanded by 4,243.7%; manufacturing output by 3185.1%. Indeed, for the years 1850-1900, and 1870-1920, the absolute percentage increase of manufacturing employment exceeded the percentage increase of enrollments (347.6% to 215.1%, and 266.1% to 184.9%, respectively). Moreover, the per annum growth rate of manufacturing employment exceeded the growth rate of public school enrollment for each of the periods 1850-1880, 1870-1920, and 1850-1900, although for the 1900-1920 period the growth rate of public school enrollments and manufacturing employment were almost identical. (See Tables 30, 31).

Such comparisons, however, prove nothing. They certainly do not establish a statistical association between the measures; indeed, although public school enrollment and manufacturing employment are correlated at a respectable level (.45) the correlation is based on an insufficient degrees of freedom to satisfy the .05 level of significance (Table 32). Moreover, the correlation between school enrollment and wage labor was not only smaller but negative, and failed likewise to satisfy the .05 test of significance. This is not to deny that with more degrees of freedom tests of statistical significance might have been satisfied, but there is some evidence from a cross sectional study of Massachusetts communities that throws some doubt on the likelihood of finding strong associations. Kaestle and Vinovskis found that manufacturing employment and total school enrollments were correlated at the -.31 level, and that in the regression analysis, the beta for manufacturing employment was a mere -0.076. Such a result suggests that the relatively strong longitudinal correlations are merely an artifact of time. Meyer and Tyack, in a national survey of school enrollment between 1870 and 1930, also report an insignificant beta for manufacturing employment. Such results are not particularly promising for a perspective that posits a direct link between the growth of wage labor, elite fears of class conflict and social disorder, and school enrollments.

Revisionist perspectives seem then to fact an uphill battle in explaining the expansion of educational enrollments. At first sight though they seem to be in a better position to explain supply side phenomena, for example, the intensification of schooling, since here the principal issue to be explained is not average daily attendance but the legislation or regulations responsible for the extension of the length of the school year. Between 1850 and 1920 the average number of days of schooling per child per year in Philadelphia's public schools increased over 200%, from 49.2 to 154.8; for the 0-19 age cohort generally it increased over 400% from 14.2 days to 75.0 days per year. (Table 9)

Unfortunately published research also poses something of a challenge to current revisionist perspectives. In attempting to isolate the social determinants of the length of the school year Kaestle and Vinovskis found that the strongest predictor of the length of school year was commercial activity and population density and percentage of the population foreign born were also significant, but population size, per capita wealth, pauper expenses, religious participation and manufacturing activity had no significant effect on the length of the school year (133-134). The independent variables that successfully predicted the amount of schooling per child per annum were slightly but not substantially different: commercial activity and per capita wealth were strongly related, but population density was only moderately related; population size, manufacturing activity and religious participation seemingly were not at all related; and the percentage of the population that was foreign born was strongly but negatively related (p. 136).

These are intriguing results, since Philadelphia wasboth a commercial and manufacturing city with a sizeable foreign born population. The results of Kaestle and Vinovskis' study do not disqualify in principle a "work discipline" or "social control" interpretation of the intensification of schooling, since only a detailed study of the politics of the relevant legislation and regulations can determine finally the etiology of the intensification of schooling in Philadelphia. Still, Kaestle and Vinovskis' findings pose something of a prima facie challenge to such an interpretation.

Much the same is true of revisionist perspectives on increases in the educational stock and educational attainment. These measures of educational expansion include such demand-side phenomena as enrollments (which revisionist perspectives to this date do not do too well in explaining) and such supply-side phenomena as the lengthening of the school year which are in principle more open to explanation by current revisionist perspectives. With respect to changes in the educational stock, for example, the annual rate of growth of manufacturing employment between 1850 and 1900 exceeded the growth rate of the educational stock of the 0-19 age cohort by a considerable margin (3.6% to 2.9% respectively), suggesting the possibility that the former might well have something to do with the latter. Between 1870 and 1920 the annual growth rates are identical (2.6%, consistent with a similar conclusion, but between 1900 and 1920 the growth rate of the educational stock exceeded that of manufacturing by a significant margin (2.6% to 2.0% respectively). Since the correlation between manufacturing employment and educational stock did not satisfy tests of significance, little more can be said about this issue until a multiple regression time series analysis is undertaken, although it is doubtful that strong relationships will be found.

TABLE 30

Absolute Percentage Growth Rates

	Manufacturing Employment	Wage Labor	Total Population	0-19 Age Cohort	Foreign Born	Public School Enrollment	Total School Enrollment
1820 - 1920	3185.1	—	1230.2	867.9	—	4243.7	1138.9 (1840-1920)
1820 - 1870	797.2	—	391.6	302.0	—	1424.5	—
1850 - 1900	347.6	—	216.4	157.3	—	215.1	247.9
1870 - 1920	266.1	60.6 (1880-1920)	170.5	140.7	116.7	184.9	186.0

Table 31

Annual Percentage Growth Rates

Period	Population	0-10 Age Cohort	Foreign Born	Manufactur. Employment	Wage Labor in Manuf.	Public School Enrollment	Total School Enrollment	Average # of Days of Schooling by Cross Sectional Cohort: Public Schools	Average # of Days of Schooling by Cross Sectional Cohort: Orig Age Cohort
1820-1920	2.6	2.3	—	3.5	—	3.8	3.1 (1840-1920)	—	—
1820-1850	3.7	3.4	—	5.4	—	7.5	—	—	—
1820-1870	3.2	2.8	—	4.4	—	5.6	—	—	—
1850-1880	2.4	1.8	0.9 (1860-1880)	3.6	—	2.6	2.5 (1850-1890)	1.8	2.6
1850-1900	2.3	1.9	1.3 (1860-1900)	3.0	—	2.3	2.5	2.5	2.9
1870-1920	2.0	1.7	1.5	2.6	1.2 (1880-1920)	2.1	2.1	2.3	2.6
1900-1920	1.7	1.5	1.5	2.0	0.6	2.1	2.5	2.3	2.8
1880-1900						1.8	—	3.5	3.9
1850-1920						2.2	2.5	2.8	2.8
1880-1920						1.9	—	2.9	3.1

Formula: $$r = \left(\sqrt[m]{\frac{Xn}{Xt}} - 1 \right) 100$$

where Xn = value of last period

Xt = value of first period

m = difference in years between first and last

Table 32

Correlations(1)

	Public School Enrollment	Total Enrollment	Number of Days of Schooling Per Capita Cross Sectional Cohort: Public Schools	Number of Days of Schooling Per Capita: Cross Sectional 0-19 Age Cohort
Population	.68*	.75	.59	.53
0-19 Age Cohort	.62*	.62	.69	.52
Manufacturing Employment	.45	.45	.08	-.07
Foreign Born (1860-1920)	-.53	-.06	.21	-.24
Wage Labor (1880-1920)	-.30	-.60	.16	.20

(1) See Appendix One for details on how this table was constructed.

*Significant at the .05 level for one tailed test of significance.

Table 33

Growth of Total Population, Foreign Born and 0-19 Age Cohort

Year	Total Population[a]		Foreign Born[a]			0-19 Age Cohort	
	Number	% Increase	Number	% Increase	% of Pop'n	Number	% Increase
1820	137,097	—	—	—	—	66,446	—
1830	188,797[c]	37.7	—	—	—	87,372	31.4
1840	258,037[c]	36.6	—	—	—	113,206	29.5
1850	408,762	57.9	—	—	—	185,074	63.4
1860	565,529	38.3	169,430[d]	—	29.96	225,432	21.8
1870	674,022	19.1	183,624[d]	8.3	27.24	267,199	18.5
1880	847,170	25.6	204,335[d]	11.2	24.12	325,466	21.8
1890	1,046,964	23.5	268,249[e]	31.2	25.6	392,023	20.4
1900	1,293,697	23.5	293,669[e]	9.3	22.70	476,198	21.4
1910	1,549,008	19.7	382,578[e]	30.2	24.70	560,500	17.7
1920	1,823,779	17.7	397,927[e]	4.0	21.82	643,170	14.7
1820-1870		391.6		—			302.0
1820-1920		1230.2		—			867.0
1870-1920		170.5		116.7			140.7
1850-1900		216.4		134.8 (1860-1920)			157.3

(a) Source U.S. Population Census

(b) White only

(c) Total foreign born

(d) Foreign born white only

Economic variables - occupational change mechanization, the demand for skilled labor, manufacturing employment, wage labor - do not thus do particularly well in explaining the expansion of enrollments, the intensification of schooling or the growth of the educational stock, at least when growth rates and simple correlations are used. There are, however, a number of demographic variables - population size, the size of the 0-19 age cohort, percentage of the population foreign born - that need to be considered.

To compare the rate of growth of Philadelphia's population with the rate of growth of school enrollments is to be struck by one simple fact: the rate of growth of the latter greatly outstripped that of the former. Between 1820 and 1920 Philadelphia's population increased by 1230.2%, while enrollment in Philadelphia's public schools increased 4243.7%. The expansion of enrollments also outstripped population growth for each of the major 50 year divisions between 1820 and 1920: 1424.5% to 391.6% for the 1820-1870 period, and 184.9% to 170.5% for the 1870-1920 period, although for the period 1850-1900, the rates of growth were almost identical (215.1% to 216.4% respectively). The rate of growth of total enrollments (public and non-public) exceeded that of population growth by even higher percentages, particularly for the 1870 - 1920 period. The rate of growth of both total enrollments and public school enrollments far exceeded, furthermore, the rate of growth of the 0-19 age cohort; for the entire period 1820 - 1920, for example, whereas public school enrollment grew 4243.7%, the size of the 0-19 age cohort in Philadelphia increased by only 867.9% (Table 33).

Per annum growth rates also bear out the much stronger growth rate of school enrollments than either aggregate population or the 0-19 age cohort. On a per annum basis, the rate of growth of public school enrollment exceeded the growth rate of the population and the 0-19 age cohort for all of the significant time periods between 1820 and 1920, as Table 31 indicates. The overall rate of growth of public school enrollments between 1820 and 1920 was 3.8% per annum; the per annum growth rate of the population was considerably less (at 2.6% pa, only 68% of the enrollment figure), while the per annum growth rate of the 0-19 age cohort was even lower, 2.3%.

For total enrollments, the picture is slightly different. The growth rate of total enrollments exceeded the rate of growth of the population, although by a diminished margin, for the period 1840 - 1920. For the remaining periods (1850-1880, 1850-1900, 1870-1920, 1900-1920) the annual growth of total enrollments exceeded the growth rate of the population but only by small margins in most cases, with the 1900-1920 period the important exception. Since the growth rate of the 0-19 age cohort was in all periods lower than the rate of growth of the population as a whole, the rate of growth of total enrollments exceeded the rate of growth of the 0-19 age cohort by quite significant margins.

Since the rate of growth of enrollments exceeded that of the population and the 0-19 age cohort, it is quite impossible for either of the latter to explain all of the former. But they can explain some of it. The correlation between the rate of growth of population with public school enrollment was a very strong .68, and for total enrollment, an even stronger .75. Both were statistically significant at the .05 level. The correlation between the growth of the 0-19 age cohort and enrollments (both public and total) was also a very strong .62 (and statistically significant). But it is important to be quite clear about what exactly this does and does not imply. It certainly implies the obvious point that the growth of population and growth of the 0-19 age cohort were a major determinant of the rate of growth of enrollments. By the same token, however, such demographic changes provide no explanation of the increasing proportion of the 0-19 age cohort enrolled in school. Yet of all the measures of educational expansion, the increasing percentage of the 0-19 age cohort at school is one of the most important. Between 1840 and 1920 the percentage of the 0-19 age cohort enrolled in school more than doubled from 22.1% to 48.3%; between 1820 and 1920 the percentage of children 0-19 enrolled in public schools increased from 8.0% to 35.1%, more than a four fold increase (Table Five). Both the economic and demographic variables leave this increase unexplained.

The relationship between school enrollments and one further demographic variable - the percentage of the population foreign born - remains to be examined. The correlations between percentage of foreign born and school enrollments are not statistically significant, but in the case of the correlation with public school enrollments, was a strong -.53 and with total enrollments, -.06. In other words, immigrant parents were far less likely to send their children to school than native born parents, but if they did, they sent them to Catholic parochial and not public schools. These results are entirely consistent with the findings of Kaestle and Vinovskis' study of 19th Century Massachusetts, in which they calculate that school enrollments and percentage of the population foreign born were negatively and strongly related (r = -.56). Clearly, increases in school enrollment were not the result of immigration. Other research also collaborates these results. Meyer and Tyack report an inverse relationship between immigration and school enrollments (AJS, 85, 3, 1979, 604-605), and Ralph and Rubinson, in a multivariate time series nation-wide aggregate analysis, concluded that immigration lowered the rate of growth of both primary and secondary enrollments between 1890 and 1924 (ASR 45, 1980, 948-51). They also discovered that immigration increased the rate of growth of private primary and secondary enrollments during the same time period. The fact then that immigration and public school enrollments were not positively related does not necessarily mean that high percentages of the children of immigrants did not attend school in Philadelphia; some at least undoubtedly went to parochial schools, a speculation consistent with the rapid growth of private and parochial school enrollments after 1840.

In turning from enrollments to changes in the educational stock, the conclusions to be drawn are little different from these emerging out of the analysis of enrollments. Population growth and the growth of the 0-19 age cohort, in that they contributed to the rate of growth of enrollments but not to the proportion of the 0-19 age cohort at school, could not logically have contributed to an increase in educational attainment. In any case from 1840 through 1880 both per capita measures of educational attainment decreased, while population size and the size of the 0-19 age cohort expanded considerably.

Where then does all this leave us? The evidence does not support a modernization or human capital model of the growth of school enrollments, the intensification of schooling or the growth of the educational stock. Nor does it support current revisionist or demographic explanations, although a revisionist explanation could well explain elements of the intensification of schooling and the growth of the education stock. What the evidence does support is a class formation explanation of the relevant indices of educational expansion. Although such an explanation is primary to be derived from Marxist theory, particularly the writings of E. P. Thompson, inklings of such an explanation can be found in modernization theory and Collins' neo-Weberian theory of status competition.

Although the evidence clearly rules out the occupational requirements component of modernization theory, the third variable, "individual economic and social aspirations," in Trow's relatively elaborate version of modernization theory points to the important fact that parents in Philadelphia did send their children to school in increasing numbers and percentages. We have seen that this fact cannot be explained by the usual economic and demographic variables advanced by historians, sociologists and economists. In Trow's model the function of the individual economic and social aspirations variable is to midiate the link between occupational requirements and the expansion of enrollments. In other words, parents invest in their children's education because they wish to improve their children's human capital, and they do so because of a constantly increasing demand for skilled labor. For Randall Collins, however, the situation is not so simple. He denies that schooling is linked to work via the demand for technical skills or any other occupational requirements mechanism, and he argues instead that "individual aspirations" for improved human capital or express larger status group aspirations or strategies of social mobility in a market society. Insofar as educational credentials are viewed as central to this enterprise, parents send their children to school in increasing numbers and for longer and longer periods of time. Changes in occupational requirements do not generate increased enrollments; status competition does.

In several respects this is an attractive model to explain the expansion of enrollments. In particular, it accounts for the fact that enrollments continued to increase while the demand for skilled labor diminished, and it recognizes that individuals usually act in ways shaped by their membership of social groupings. But for all its virtues it is tarnished in two ways. Empirically, it goes much too far in severing any connection between changes in the organization of work and skill requirements on the one hand and the expansion of schooling on the other. And at a theoretical level, the process of class formation provides a more compelling explanation of indivudal educational behavior than provided by processes of status competition.

The process of class formation focuses attention upon two issues: the structuration of social behavior by the social and economic logic of market relations or what Anthony Giddens calls "the class principle", and second, the pursuit of a variety of different combinations of social and economic strategies - ranging from school attendance and child labor to fertility levels, age at leaving home, age at beginning work, age of marriage, home ownership, child-rearing methods, residential location and institutional building and affiliation - by constituent groups within the nascent working and middle classes. By focusing on the processes of class formation, both of the working and middle classes, it ought to be possible to provide a parsominous account of the expansion of school enrollments and individual educational behavior that does not fall victim to the metaphysical mysteries of human capital theory, and uses the conceptual tools of class analysis in a way appropriate to the analysis of the demand for schooling.

The empirical evidence that might be employed to support such a theory draws upon a variety of sources. There is evidence, reported in the Annual Reports of the Board of Education throughout the 19th Century,of long waiting lists, overcrowding and an insistent demand for schooling. There is some evidence in the Annual Reports of the Board of Education of the economic and social aspirations of high school student aspirations, particularly of those attending C.H.S. There is some scattered evidence from a variety of newspaper and other literary sources of the economic and social aspirations of middle class and working class groups and of their views of social mobility and educational credentialling. There is some evidence, both descriptive and prescriptive in character, of child rearing methods. There is considerable evidence of middle class participation in institution-building and reform throughout the 19th Century, most pertinently in Philadelphia's public school system. But above all else we have large quantitative data sets derived from school records and the federal census that enable close study of patterns of school attendance, home ownership, child labor and working youth, fertility, age of marriage, and in conjunction with school board annual reports, the urban ecology of school attendance. Together, this wide array of evidence should make possible a close examination of the structuration of educational behavior by the social and economic imperatives of wage labor and the place of school attendance in the process of class formation. And with educational behavior explained, we should be able to explain the growth of school enrollments during the 19th and early 20th centuries.

APPENDIX ONE

Table 32 was constructed on the basis of standardized measures of the relevant variables. This was not done using standard deviation units as in normal Z scores, but by expressing changes in each of the variables as a percentage of their respective 1920 figure. Correlations were then drawn using the percentage differences between the levels of measurement at 10 year intervals.

POPULATION, ETC. AS A PERCENTAGE OF 1920 FIGURES

Year	Population	Foreign Born	Manufacturing Employment	Wage Labor	Total School Enrollment	Public School Enrollment	0-19 Age Cohort
1820	7.5	--	3.0	--	--	2.3	10.3
%	2.8					-0.4	3.2
1830	10.3	--	--	--	--	1.9	13.5
%						8.0	4.1
1840	14.1	--	7.5	--	8.0	9.9	17.6
%	8.3		7.3		9.2	10.7	11.1
1850	22.4	--	14.8	--	17.2	20.6	28.7
%	8.6		10.6			6.6	6.3
1860	31.0	42.5	25.4	--	--	27.2	35.0
%	5.9	3.6	1.9		17.7	7.8	6.5
1870	36.9	46.1	27.3	--	34.9	35.0	41.5
%	11.0	5.2	16.8			10.2	9.1
1880	47.9	51.3	44.1	62.2	--	45.2	50.6
%	9.5	16.1	12.3	21.6	12.5	3.8	10.3
1890	57.4	67.4	56.4	83.4	47.4	49.0	60.9
%	13.5	6.3	10.2	4.2	12.6	15.9	13.4
1900	70.9	73.7	66.6	87.6	60.0	64.9	74.3
%	14.0	22.4	20.8	2.0	16.4	7.3	12.8
1910	84.9	96.1	87.4	89.6	76.4	72.2	87.1
%	15.1	3.9	12.6	10.4	23.6	27.8	12.9
1920	100	100	100	100	100	100	100
%							

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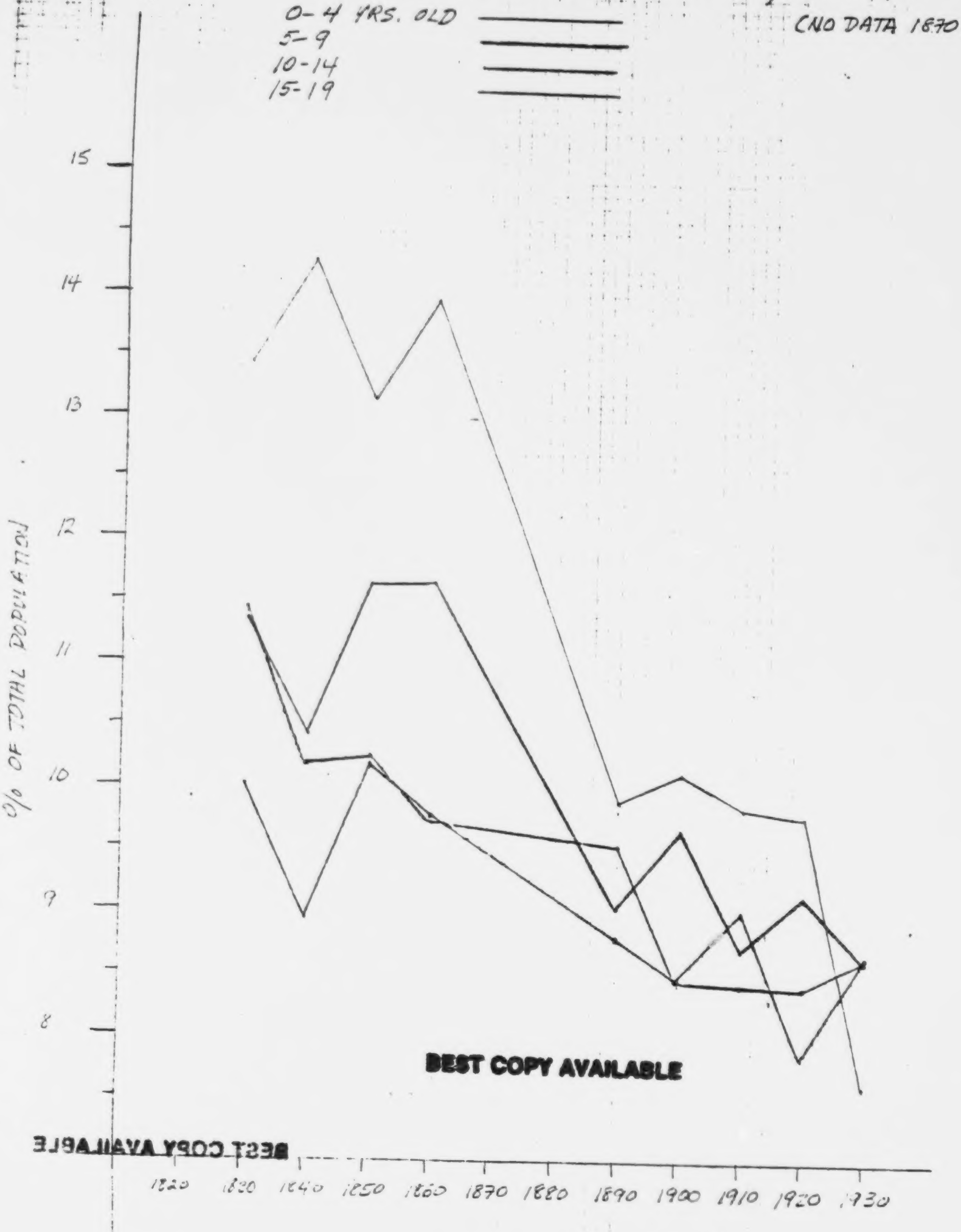
% OF TOTAL POPULATION IN 4 AGE COHORTS, 1830-1930

(NO DATA 1870 + 1880



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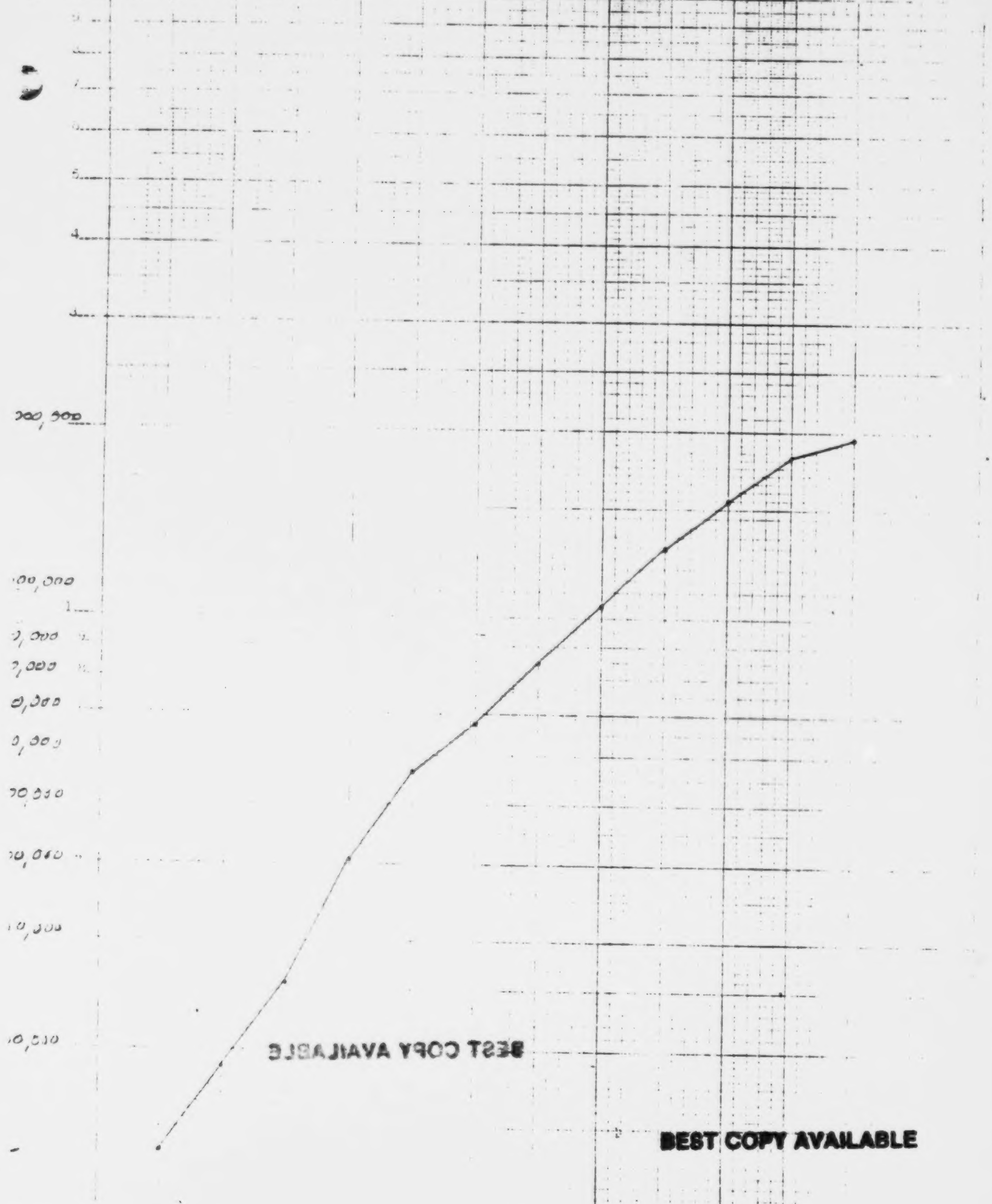
PHILA. COUNTY, 1820-1930 (SEMI-LOG PLOT)



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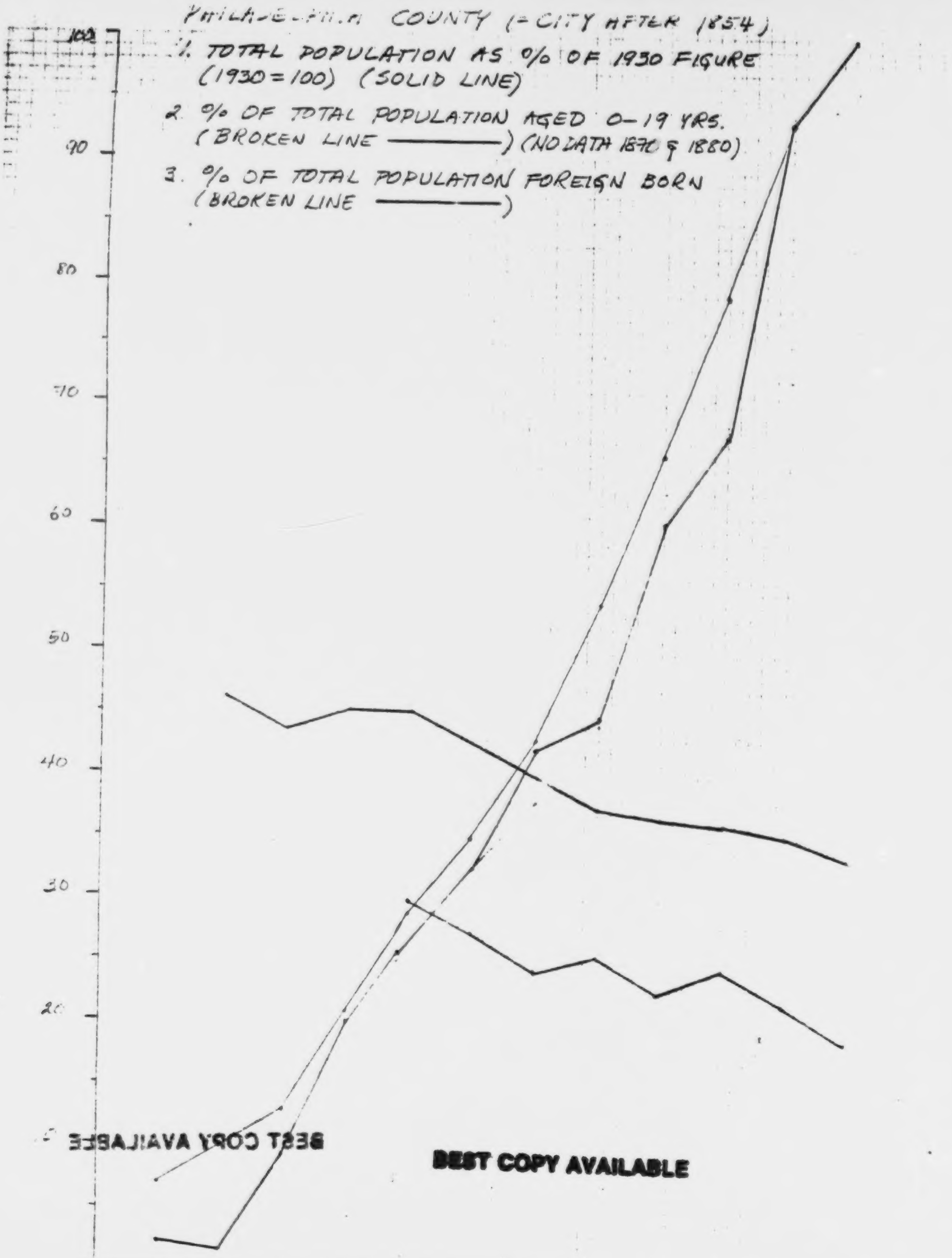

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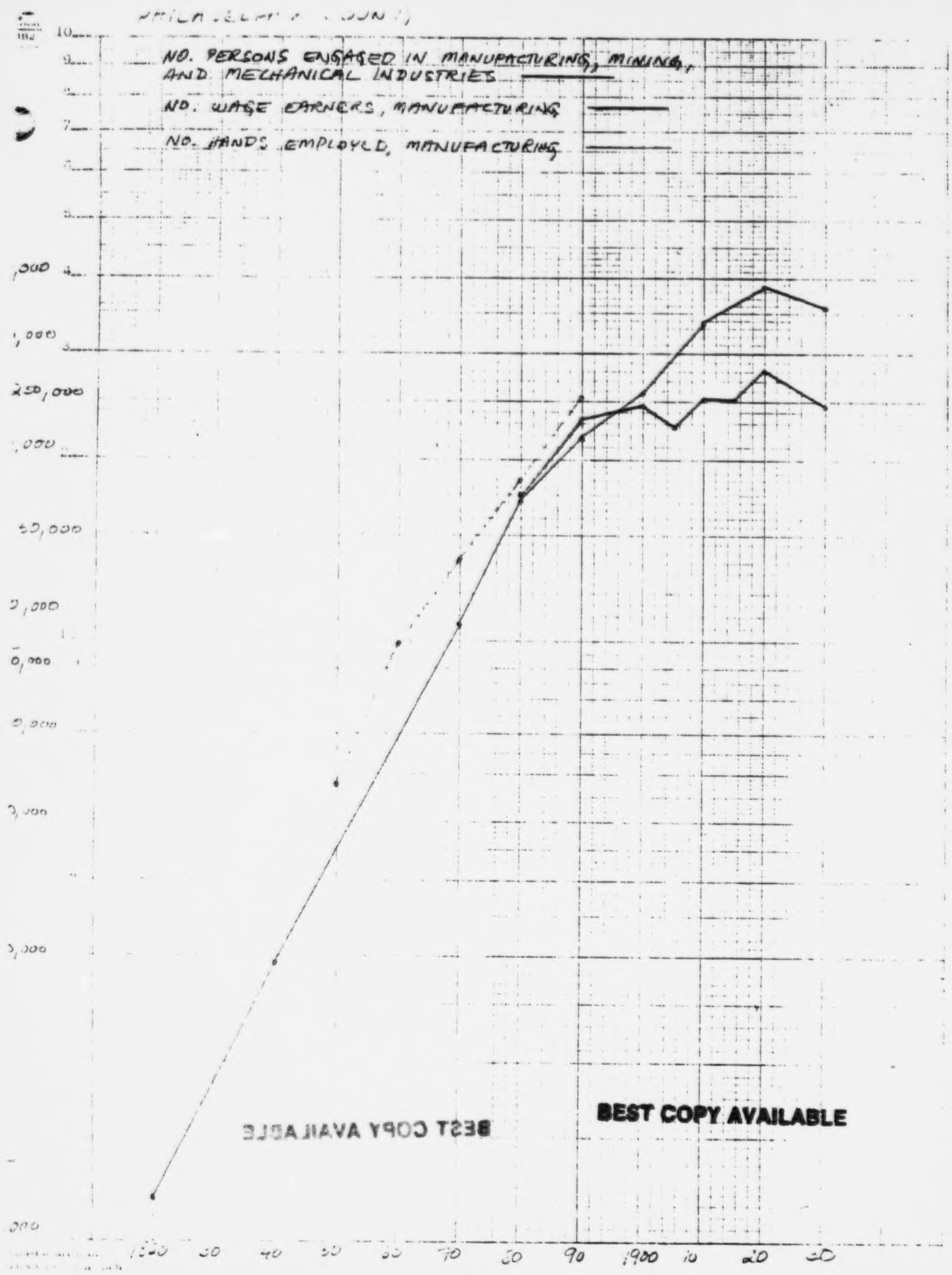

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Working Paper No. 8

Philadelphia High School for Girls, 1850-1880: Enrollment and Achievement

David Hogan

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I. INTRODUCTION

This is a study of the family background of students attending GHS in Philadelphia between 1850-1880 and the process of educational achievement at the school for the same period. For almost the entire 30 year span GHS was both an academic high school for girls (indeed, the only one in the city) and a Normal School for the training of teachers--throughout the period almost half of the graduates of the school became teachers in the Philadelphia public school system. The GHS data set, based on samples of the entering classes of 1850, 1860, 1870, and 1880, and then linked to the federal manuscript census for each of those years, permits answers to four questions: (1) From what kind of families did the students attending GHS come from? (2) Did the social composition of the student body change with changes in the character of the school? (3) What kind of process of school achievement characterized GHS over these years--meritocratic? ascriptive? neither?--and did it alter with changes in the character of the students or the school? and (4) What kinds of students--from what kinds of families, and with what level of academic success--went into teaching?

GHS (a heuristic title only, since the name of the school changed several times during the period under study) started as a Model School in 1818. In that year the Pennsylvania legislative established the First School District of Pennsylvania, provided for the education of poor children at public expense, created a governing body for the school district (the Philadelphia Board of Controllers) and stipulated the creation of a "Model School" that would provide teachers for the Philadelphia schools. Later that year the Board of Controllers opened a Model School and appointed Joseph Lancaster Principal to provide young men and women with an education sufficient to become teachers in the cities schools. The Model School was in fact simply a grammar school based on Lancasterian or monitorial principles with no teacher training as such. Students, on completing the course, simply assumed teaching positions in the cities schools.

Initially, the students attending the Model School were both male and female--in fact, when it opened in 1818 it admitted more boys (413) than girls (320). By 1821 enrollments had shifted in favor of females; by 1836 the enrollment was entirely female.

Following the rapid expansion of the number of children in the schools with the passage of the free and universal common school laws of 1834 and 1836, the Model School was replaced in 1848 by a two year Normal School and a School of Practice. Courses in pedagogy were introduced for the first time; students were officially required to have completed a grammar school eduation before admittance, although there is some evidence that the requirement was not strictly enforced. Students observed and practicised their pedagogical skills at the School of Practice (essentially a grammar school not unlike the old Model School). During the 1850's, however, grammar school principals grew increasingly jealous of the privileged access of grammar school students at the School of Practice to the Normal School. Students from the Model School were considerably overrepresented among the successful candidates of the Normal School entrance exams. The grammar school principals (whose prestige, salaries, and promotion opportunities were tied to the success of their students in the Normal School entrance exams) "attributed the success of the Model School to extraneous advantages, of which they complained in a formal remonstrance, and asked leave to have its grade reduced, so as to remove it from the arena of competition" (157). Together with advocates of an academic school for girls -- who desired a school in which girls could enroll in teacher-preparation careers if they wished but would not be required to do so -- the principals of the girls grammar schools succeeded in 1859 in pushing the Board of Controllers to adopt a series of wide ranging changes: closing the School of Practice, replacing the Normal School with the Philadelphia High School for Girls (an academic high school for girls) and instituting a 3-year course of instruction, including a Latin component. Although the Normal School ceased to exist in name, GHS continued to prepare students for teaching, and wished to place such students in a number of "Practice Schools," with the approval of the relevant Sectional Boards of Education, located throughout the city. When the Sectional Boards refused to do so, in 1860 the Board of Controllers restored the School of Practice, renamed Girls High School as the "Girls High and Normal School" (renamed again in 1868 as "The Girls Normal School"), dropped Latin from the curriculum but required that the first two years of the school program be academic in character while the third year was to be given over to teacher training.

And so the matter remained until 1876. In that year the school moved into a new building on the corner of 17th and Spring Garden; a new four year curriculum was introduced, with the last year an optional year in teacher training. To all intents and purposes, the school in 1876 became a combined academic high school and teacher training institution, and one without a differentiated curriculum. Over the course of the next 10 to 15 years the public school system expanded rapidly (see my Working Paper #1); applications to set for the entrance exam into GHS multiplied; the demand for an autonomous and full-fledged secondary school for girls escalated; and the size of the school almost doubled (from 902 in 1876 to 1,775 in 1892); advocates of a commercial course of instruction clamored for the expansion of educational opportunities for girls and spoke of the practical needs of society. Eventually, in 1893, the Board split the school into two autonomous units--the Girls High School located at 17th and Spring Garden, and the Normal School for Girls in a new building on 13th and Spring Garden. The Normal School focused exclusively upon teacher training and supervised practice teaching, while at GHS a tripartite course of instruction was offered: Classical (including Latin and Greek), General, and Business. The first two were considered to be college preparatory courses, one for university and the liberal arts womens college, and the second primarily for those wishing to enter the Normal School; the Business course was essentially a terminal course for students wishing to enter the world of white collar work in commerce.

The data base for our analysis of enrollment and achievement patterns at GHS is derived from the school's registar of students and the manuscripts of the U.S. federal population census. For 1850 we took a 100% sample (n=104) of the entering class, of which we successfully linked 69 or 66% to the federal census; for 1860 we again took a 100% sample (n=81) of which 44 or 54% were linked to the census; for 1870 we took a 50% sample (n=121) of which 77 or 73% were linked to the census; for 1880 we took a 50% sample (n=163) of which 127 (78%) were linked to the census. When the linked and unlinked files are compared by major variables, some differences are noticeable but none are statistically significant (see Appendix One).

The school registar included information on date of admission, birthdate, parent or guardian's occupation, grammer school admitted from, the total number of years in attendance in public schools, average scholarship, date of withdrawal, reasons for leaving, and the name of the school the student was appointed to as a teacher (where applicable). The census provided information on parents occupation, age, literacy, ownership of real property, and place of birth; for the student's siblings it provided information on school attendance, literacy, age (and therefore birthorder), birthplace, and if applicable, nature of occupation. All heads of households who were listed as belonging to skilled worker occupations were linked to to the city directory to establish whether they were employees or employers ("masters").

In Part II of the paper the social composition of the schools enrollment for each of the census years is examined using a four category stratification model of class: proprietary (proprietors of goods and services, professionals, manufactures), middle class, skilled working class, and semi and unskilled working class. Two features of this model should be noted. First, it excludes a fifth category--a residual category, "other"--that is used in the analysis of school achievement in Part III in order to facilitate the direct comparison of the social composition of the students at GHS with population census data. Second, the four-category stratification model of class shifts skilled workers identified as masters out of the proprietary class and into the skilled worker category, once again to facilitate comparison between school and census data.

In the study of school achievement in Part III four measures of school achievement are used: length of stay, whether or not the student entered the ranks of teaching, and G.P.A. Unfortunately, the school did not specify whether or not a student had graduated, thereby depriving the analysis of one of the most useful measures of school achievement employed in the analysis of CHS, GHS (1901-22), and some of the other high schools examined. For 1880, no information on grade point average was available.

II. ENROLLMENT

For the entire period between 1850 and 1880, the daughters of one class dominated enrollments at GHS--the daughters of proprietors. In 1850 they accounted for more than 43% of all students; 30 years later they still accounted for 42.41%. Indeed, in one year, 1870, they constituted 51.24% of the student body (Table 1). Among the proprietary class, daughters of the proprietors of goods were the most numerous, accounting for 35.5% of the students from the proprietary class in 1850, and 37.6% in 1880 (in 1860 they accounted for 48.6% of the proprietary class) (Table 2). The second most numerous group within the proprietary class for 1850 and 1860 were daughters of masters and manufacturers; for 1870 and 1880 it was the daughters of proprietors of services.

After students from the proprietary class, students from the skilled working class were the second most important class, and remained so for the entire 1850-1880 period; indeed, in one year, 1860, they accounted for slightly over 35% of the enrollment at the school. For 1850 and 1870, all daughters from the skilled working class who attended GHS were the daughters of skilled workers; for 1860 and 1870 a minute fraction of the skilled working class were daughters of working class supervisors (or foremen).

After the proprietary and skilled working classes, daughters of the middle class were the next most important class. In 1850 they constituted 13.46% of the enrollments at GHS; and although the percentage dipped in 1860 and 1870, by 1880 it rose to 14.56%. This

Table 1

Class, By Cohort, 1850-1880

	1850	1860	1870	1880	% of Total
Proprietary	43.27	46.84	51.24	42.41	45.67
Middle	13.46	11.39	9.92	14.56	12.55
Skilled	27.88	35.44	22.31	21.52	25.54
Unskilled	0.96	2.53	4.96	6.96	4.33
Other	14.42	3.80	11.57	14.56	11.90
Total	100.00	100.00	100.00	100.00	100.00
n	104	79	121	158	462

N = 462. Missing Cases = 7.

Not significant at the .05 level.

Table 2

Occupational Group, By Cohort, 1850-1880

Occupational Group	Cohort 1850	1860	1870	1880
Professional	3.85	7.59	4.23	8.23
Proprietor (goods)	15.38	22.78	16.90	15.19
Proprietor (services)	6.73	2.53	7.04	7.59
Clerks	6.73	3.80	0.00	3.16
Other White Collar	2.88	5.06	1.41	7.59
Masters/Manufacturers	12.50	10.13	5.63	6.96
White Collar Supervisors	1.92	1.27	0.00	1.90
Working Class Supervisor	0.00	1.27	0.00	0.63
Skilled Workers	27.88	34.18	29.58	20.89
Semiskilled Workers (factory)	0.96	0.00	2.82	1.27
Semiskilled workers (others)	0.00	0.00	0.00	2.53
Unskilled	0.00	0.00	4.23	0.63
Other Working Class	0.00	2.53	1.41	2.53
Government/Military	1.92	1.27	7.04	1.90
Women/Domestic	0.96	0.00	1.41	1.27
Women--Other	0.96	0.00	0.00	0.00
Agricultural	2.88	1.27	0.00	2.53
Other	0.96	0.00	1.41	1.27
None	8.65	2.53	16.90	9.49
Gentlemen	4.81	3.80	0.00	4.43
Total	100.00	100.00	100.00	100.00
n	104	79	71	158

N = 412; Missing Cases = 57.

Not significant at .05 level.

drop in 1860 and 1870 was due primarily to a decline in the number and proportion of daughters of clerks--from 6.73% in 1850 to 3.80% in 1860 and 0.0% in 1870. The proportion of daughters from other white collar homes was highly eratic, increasing from 2.88% in 1850 to 5.06% in 1860, then dropping to 1.41% in 1870, and then climbing to 7.59% in 1880. The proportion of daughters from the homes of white collar supervisors was low but fairly stable, although it dropped to zero in 1870.

Daughters of the unskilled working class accounted for a very small but growing proportion of the enrollment at GHS. In 1850 they represented less than 1.0% of the enrollment; by 1880, almost 7%. Most of this increase was due to the growth in the enrollment of daughters of unskilled workers and other working class occupations, rather than a growth in the number of daughters of fathers employed as semiskilled workers in factories or elsewhere.

Since the data set encompasses the period 1850-1880 only, only one important institutional change falls within the purview of the data set--the short-lived effort to transform the teacher-training Normal School into an essentially (although not exclusively) academic high school for girls in 1859. The following year the reform was rescinded, although the program was made partly academic and extended to three years. Although it might well have been a coincidence, in 1860 the percentage of students from the skilled working class jumped almost eight points--from 27.88% to 35.44%--and the percentage of students from the proprietary class grew three percentage points.

In the case of the students from the proprietary class this might well have simply part of a general 20-year increase between 1850 and 1870 in their attendance at the school, but it is noticeable that the proportion of all students accounted for by the skilled working class dropped preciptiously by 1870. At first glance this suggests the possibility of linking this increased presence of the skilled working class at the school to the reforms of 1859, and to conclude that the reforms of 1859 brought into the school students, particularly from the skilled working class, more interested in an academic program than in teacher training. The difficulty with such a conclusion is that in 1860 the number of students, compared to 1850, actually fell--indeed, the number of students from the skilled working class dropped by almost a quarter. Such a decline could as much indicate dissatisfaction with the reforms of 1859 as the increased proportion of students from the skilled working class could indicate endorsement of the changes in 1859. The evidence on enrollment alone then does not allow a judgment on the issue.

Tables 3-6 provide a measure of the representativeness of each class for each census year between 1850 and 1880; Table 7 summarizes the results. The Index of Representativeness is calculated by dividing the proportion of the students of each class enrolled at GHS into the proportion of adult (16 and over) males of each class in the labor force for that census year. Students from the residual ("other") class are excluded from the computation; moreover, in order to make the school enrollment figures more directly comparable

Table 3

Occupational Distribution, Philadelphia, and Enrollment at GHS, 1850

	GHS		Philadelphia		Index of Representativeness
	N	%	N	%	
Proprietary	33	37.0	14,414	15.4	2.40
Middle Class	14	15.7	6,244	6.7	2.34
Skilled Working	41	46.0	49,418	52.8	0.87
Unskilled Working	1	1.1	23,488	25.1	0.04
Total	89	100.0	93,564	100.0	
Other	15		14,208		

Number of Masters = 12.

Tau = .176.

Masters moved from proprietary class to skilled workers.

Table 4

Occupational Distribution, Philadelphia, and Enrollment, GHS, 1860

	GHS		Philadelphia		Index of Representativeness
	N	%	N	%	
Proprietary	33	44.5	21,068	16.8	2.64
Middle Class	9	12.1	9,320	7.5	1.61
Skilled Working	32	43.2	58,524	46.8	0.92
Unskilled Working	2	2.7	36,158	28.9	0.09
Total	74	100.0	125,070	100.0	
Missing and Other	15		18,718		

Number of Masters = 4.

Tau = .166.

Masters moved from proprietary to skilled workers.

Table 5

Occupational Distribution, Philadelphia, and Enrollment, GHS, 1870

	GHS		Philadelphia		Index of Representativeness
	N	%	N	%	
Proprietary	57	53.2	24,506	16.1	3.30
Middle Class	12	11.2	13,633	9.0	1.24
Skilled Working	32	29.9	66,573	43.7	0.68
Unskilled Working	6	5.6	47,494	31.2	0.17
Total	107		152,206	100.0	
Missing and Other	14		20,088		

Number of Masters = 5.

Tau = .203.

Masters moved from proprietary class to skilled workers.

Table 6

Occupational Distribution, Philadelphia, and Enrollment, GHS, 1880

	GHS		Philadelphia		Index of Representativeness
	N	%	N	%	
Proprietary	66	50.7	30,339	15.3	3.31
Middle Class	23	17.6	20,008	10.1	1.74
Skilled Working	35	26.9	83,923	42.2	0.63
Unskilled Working	11	8.4	64,411	32.4	0.33
Total	130	100.0	198,681	100.0	
Missing and Other	28		27,812		

Number of Masters = 1.

Tau = .177.

Masters moved from proprietary class to skilled workers.

Table 7

Class by Cohort and Index of Representativeness
1850-1880

	1850	1860	1870	1880
Proprietary	2.40	2.64	3.30	3.31
Middle	2.34	1.61	1.24	1.74
Skilled Working	0.87	0.92	0.68	0.63
Unskilled Working	0.04	0.09	0.17	0.33
Tau	0.176	0.166	0.203	0.177

1980

to the census figures, masters are shifted out of the proprietary class into the skilled working class (census enumerators did not distinguish between skilled workers who were employers and skilled workers who were employees). Even then, the figures are not directly equivalent, since school enrollment percentages are calculated on the basis of heads of households, while labor force figures are calculated on the basis of all males 16 and over in the labor force; the computations then of the index of representativeness systematically underestimate the degree of under- or over-representativeness.

Between 1850 and 1880 the index of representativeness for the daughters of the proprietary class increased from 2.40 to 3.31. During the same period the absolute size of the proprietary class in the city grew each decade, the relative importance of the proprietary class increased slightly in 1860 and 1870, but returned to its 1850 level in 1880. The increase in the index of representativeness was not due, therefore, to a drop in the relative size of the proprietary class in the city, but to an increase in the relative proportion of students from the proprietary class attending GHS. Middle class students, on the other hand, were quite strongly overrepresented in 1850 (2.34 times), but in 1860 and 1870 they were progressively less overrepresented, before increasing slightly again in 1880, although to a level lower than the 1850 figure. This overall, albeit erratic, decline, was due in part, at least through 1870, to a declining proportion of the enrollment at GHS, and in part, to a growth in the relative size of middle class occupations in the city as a whole (from 6.7% in 1850 to 10.1% in 1880).

While the proprietary and middle classes were overrepresented, both working class groups--skilled and unskilled--were underrepresented. Although the degree of underrepresentation declined between 1850 and 1880 (from 0.87 to 0.63), still the skilled working class was not nearly as underrepresented as the unskilled working class, although the degree which they were underrepresented dropped considerably from 0.04 to 0.33. In the case of the skilled working class, the increase in the degree of underrepresentativeness was due solely to a decline in the proportion of students from skilled workers homes attending GHS (from 46.0% in 1850 to 26.9% in 1880). The percentage of skilled workers in the city also declined between 1850 and 1880 (from 52.8% to 42.2%); all other things being equal, this decline would have diminished rather than increased the level of underrepresentativeness. But all else was not equal; indeed, the drop in the proportion of students from the skilled working class enrolled at the school was much sharper (from 46.0% to 26.9%, a drop of nearly 20 percentage points or 42.0%) than the drop in the relative size of the skilled working class in the city as a whole (from 52.8% to 42.2%, a drop of 10 percentage points or 20%). The decline in the degree of underrepresentativeness of the unskilled working class, on the other hand, was due solely to the fact that the increase in the proportion of the enrollment at GHS from unskilled homes (from 1.1% in 1850 to 8.4% in 1880) was more than sufficient to outrun the increase in the relative size of the unskilled working class in the labor force of the city (from 25.1% to 32.4%). (All else equal, this latter increase would have increased the degree of underrepresentativeness of the unskilled working class.)

The overall direction and strength of the changing composition of the school's enrollments is represented in the changes in the value of Tau. Tau is a PRE asymetric measure of association for nominal level variables with values ranging from 0.0 to +1.0 with the class distribution of high school attendance as the dependent variable and the class distribution of Philadelphia males 16 and over in the labor force as the independent variable. In 1850 the value of Tau was 0.176; in 1880, 0.177. In between 1850 and 1880, however, the value of Tau oscillated widely, dropping to 0.166 in 1860 and rising sharply to 0.203 in 1870 before dipping to 0.177 in 1880. In other words, the overall level of inequality of enrollment in 1850 and 1880 was roughly the same, although it dropped a little in 1860 and rose sharply in 1870. A Tau of 0.177 or 0.176 is comparable to an R^2 of .177 or .176--in effect a low to moderate level of inequality.

At this point it is appropriate to inquire whether or not it is possible to see any kind of a relationship between changes in the structure of enrollments and changes in the institutional character of the school. (It will be recalled that between 1848 and 1859 the school was a two year Normal School; that in 1859 it was transformed into a year academic high school although including a teacher-training component; that the following year, 1860, the school was turned back into a teacher training institution, although not all of the academic innovations of 1859 were repealed; that in 1876 the Board formally approved a new course of studies that included a 3-year academic program and a further year of teacher training for those wishing to enter teaching; and that in 1893, after prolonged agitation, the school was split into two separate and autonomous institutions, one an academic high school for girls, and the other the Normal School.) The three major institutional changes then that took place between 1850 and 1880 were the 1859 reforms, their repeal a year later, and the reforms of 1876. In other words, although still primarily a teacher-training institution, the school gradually, haltingly, grew increasingly academic.

On the other hand the major features of the enrollment pattern at GHS between 1850 was the overwhelming dominance of daughters of the proprietary class, the steady and continued growth in their relative significance between 1850 and 1880 primarily as a consequence of the growing percentage of proprietary class families enrolling their daughters in the school (rather than as a result of the growth in the relative size of the proprietary class in the city), and the decline, following an increase between 1850 and 1860, in the relative significance of the daughters of the skilled working class, in part because of the declining relative size of the skilled working class in the city, but also in part because of a decline in the percentage of skilled working parents sending their daughters to

GHS. (The decline in skilled worker enrollment was greater than the decline in the relative number of skilled workers in the city.)

If the institutional changes and the changing pattern of enrollments are related, it seems plausible to interpret the growing proportion of the daughters of the proprietary class--a consequence, it should be emphasized again, primarily of a steady increase in the proportion of proprietary class families enrolling their daughters at GHS--as an endorsement of the increasing academic character of the school, and the decline in the relative significance of the daughters of the skilled working class as a vote of no confidence at the steady encroachment of the academic program, and/or a reflection of the relative inability of skilled working class families, compared to the parents from the proprietary class, to afford to keep their daughters at the school for an increasing length of time. The evidence on enrollment patterns by itself does not permit further speculation, but the temporal association of the institutional and the pattern of enrollments is at least consistent with such an interpretation. Further evidence bearing on the issue will be examined in the discussion of school achievement; for the remainder of this section I wish to discuss the association between enrollment and several other variables in the data set.

Apart from occupation and class, the character of enrollment patterns at GHS can be examined with a variety of additional variables: heads nativity, race, and age of entry and leaving, birthorder and life cycle status of siblings of the student. First, heads birthplace. The preponderance (64.29%) of heads were born in the United States; only in one year, 1870, did the proportion exceed this by an appreciable percentage (Table 8). Approximately 20% were Irish born, varying from 14.29% in 1860 to 22.99% in 1870. A little less than 5% were born in Germany, and a little over 10% were born in England and Scotland. Crosstabs were also run on the birthplace of the heads spouse and the student by cohort; in neither case were the results statistically significant, although some changes in the distribution of spouses birthplace are noticeable. For example, whereas 85% of the spouses of the 1850 cohort were born in the U.S., the percentage dropped each succeeding cohort to 63.73% in 1880, while the percentage of spouses born in Ireland steadily increased from 11.11% in 1850 to 21.57% in 1880. Simultaneously, the proportion of spouses born in England and Scotland increased from 3.70% in 1850 to 8.82% in 1880, and the percentage of German-born spouses increased from zero to 5.88%. The students were overwhelmingly (97.76%) American born with little variation by cohort.

The GHS data set also make possible comparison between the population of the city as a whole and other features of the students family of origin--of these, heads race, literacy, and ownership of real property are the most important. First, race: in both 1850 and 1860 100% of household heads were white; in 1870 the figure drops to 95.51%. No figures were available for 1880. Obviously this was hardly representative of the city as whole: in 1850 4.8% of the population was black: in 1860 4.4%; in 1870, 4.0%. To this comparison

Table 8

Heads Birthplace, by Cohort, 1850-1880

	1850	1860	1870	1880	% of Total
U.S.	67.65	76.19	60.92	60.80	64.29
Ireland	16.18	14.29	22.99	22.40	20.19
Germany	1.47	4.76	4.60	7.20	4.97
England and Scotland	14.71	4.76	11.49	9.60	10.56
Total	100.00	100.00	100.00	100.00	100.00
n	60	42	87	125	
Missing and other	36	39	34	38	

N = 322 Missing and other = 147

Not significant at .05 level.

C = .146

it might be objected that to compare head's race with the racial distribution of the city as a whole exaggerates the unrepresentativeness of the racial difference between the racial composition of the city and the school. While in principle this is possible, in fact it is not, for the simple reason that students whose fathers were black were also black themselves; head's race then is a good proxy for students race. Thus, in 1850, 100% of the students at GHS were white; in 1860, 97.67%; in 1870, 96.39%; and in 1880, 100% again. GHS was very clearly an overwhelmingly white institution.

Finally, the GHS data set allows a comparison of the sex of heads of households of the city and GHS students. In 1850, 88.4% of the heads were male; in 1860, 93.18%; in 1870, 80%; in 1880, 87%. The changes were not statistically significant.

Turning from the student's head of household to the student herself, it is instructive to examine the pattern of enrollments with the aid of four additional variables: age of entry, age at entry, birthorder, and life cycle status of siblings. First, age at entry. Overall, a third of the students entered the school before they turned 15; another third before they turned 16; and the remainder after turning 16 (Table 10). Differences between cohorts were only small and not statistically significant--a fact reflected in the very small changes in the mean age of entry. Changes in the age of leaving across time, however, were statistically significant, although this was due more to quite remarkable fluctuation between 1850 and 1860, rather than a sustained change between 1850 and 1880

Table 10

Age at Entry, by Cohort

Age at Entry	1850	1860	1870	1880	% of Total
17 +	11.33	4.29	14.05	10.83	10.81
16-16.9	16.13	18.57	27.27	18.47	20.41
14.9-15.9	38.71	44.29	32.23	31.85	35.37
<14.8	33.33	32.86	26.45	38.85	33.33
Total	100.00	100.00	100.00	100.00	100.00
n	93	70	121	157	
Missing	11	11	0	6	
Mean Age of Entry	15.64	15.38	15.72	15.45	

N = 441 Missing Cases = 28

Not significant at the .05 level.

C = .175

(Table 11). The 1860 cohort was easily the oldest ochort at age of leaving, jumping from a mean of 16.99 in 1850 to 17.61 in 1860, and then declining thereafter to 16.80 in 1880.

More interesting are the character of, and changes in, the relationship between GHS students and their siblings. It must be emphasized that the category "only" in the discussions of birthorder and sibling status does not necessarily mean "only child ever born or living," since the census of 1850-1890 did not enquire of parents the number of children ever born. The category "only" in the discussion then could include both "only child ever born" as well as "only child living at home." It is also important to note that in the discussion of siblings status ("dependent," "working") "dependent" siblings are siblings at home or at school, while "working" siblings includes siblings 15 years or older at work.

First, the relationship between enrollment and birthorder. In 1850, only 8.05% of the students at GHS were the "youngest" child in their families, and only 12.64% the oldest; almost 37% were middle children, and fully 42.53% were the "only" child (Table 12). In 1860, that percentage climbed to 48.72%, but it declined some 6% points by 1870, and by another 13% points by 1880. In that year the single largest group of children were middle children (35.33%). Still it is clear that from 1850 through 1870 an extraordinarily high percentage of

Table 11

Age at Leaving, By Cohort

Age of Leaving	1850	1860	1870	1880	% of Total
18+	17.0	22.58	25.53	18.00	20.08
17-17.9	31.00	35.48	25.53	24.00	29.73
16-16.9	36.00	37.10	1.15	35.00	32.82
15.9	16.00	4.84	29.79	24.00	17.37
Total	100	100	100	100	100
n	100	62	47	50	
Missing	4	19	74	113	
*Mean Age of Learning	16.99	17.61	16.96	16.80	

N = 259   Missing Cases = 10

Significant at the .05 level.

C = .252

TABLE 12

Birthorder, By Cohort

	1850	1860	1870	1880	% of Total
Youngest	8.05	11.54	18.18	17.33	14.29
Middle	36.78	21.79	28.57	35.33	31.63
Oldest	12.64	17.95	10.39	18.00	15.31
Only	42.53	48.72	42.86	29.33	38.78
Total	100.00	100.00	100.00	100.00	
n	87	78	77	150	

N=392 Missing Cases =67

Significant at .05 level

C= .206

Table 13

Birthorder, By Age at Entry

	14.8	14.9-15.9	16.0-16.9	17+	% of Total	Mean Age
Youngest	11.90	17.90	12.50	10.81	14.09	15.48
Middle	38.89	32.84	22.22	24.32	31.98	15.31
Oldest	11.11	13.43	19.44	27.03	15.18	15.80
Only	36.10	35.82	45.83	37.84	38.75	15.57
Total	100.00	100.00	100.00	100.00	100.00	
n	126	134	72	37	369	

N=369 Missing Cases=

C =.192

Not Significant at the .05 level.

students came from families in which they were the "only" child; children from families in which they were not the only child had a much lower chance of attending GHS than children from families in which they were the only child.

To probe the possible corollaries of the relationship between enrollment and birthorder, the relationship between birthorder on the one hand, and age, head's birthplace and class were examined. The relationship between birthorder and age at entry was not statistically significant; it is not, however, without some interest. In particular, only children were slightly older, on average, than younger or middle children, although not as old as oldest children (Table 13). This could be viewed as circumstantial support for the claim that "only" children were in fact, for most part, only children rather than the only child still living at home, since if the latter, they would tend, on average, to be in the age range of the youngest children.

The relationship between birthorder and heads birthplace was also not statistically significant, but little or nothing should be inferred from this since, for some unknown reason, 92% (n=140) of the only children were missing values on heads birthplace, whereas only seven other students from all other categories of birthorder were missing information on heads birthplace. This is a pity because it would have been interesting to compare a meaningful measure of the relationship between head's birthplace and the relationship between birthorder and class, particularly since the latter

Table 14

Birthorder, By Class

	Proprietary	Middle	Skilled Working	Unskilled Working	Other	% of Total
Youngest	12.57	6.12	10.10	40.00	35.90	14.56
Middle	30.05	32.65	40.40	20.00	25.64	32.21
Oldest	15.85	16.33	18.18	20.00	5.13	15.58
Only	41.53	44.90	31.31	20.00	33.33	37.66
Total	100.00	100.00	100.00	100.00	100.00	100.00
^	183	49	99	15	39	385

N= 385 Missing Cases = 84

C = .285

Significant at the .001 level.

relationship was statistically significant (Table 14). The most dramatic differences are reflected in the differences between middle class families and unskilled working class families. Thus, while only 6.12% of middle class students at GHS were youngest children, 40.0% of unskilled working class daughters were. Moreover, while almost 45% of middle students were only children, less than half that percentage (20%) of unskilled working class students were only children. But although the most dramatic differences, these were not the only differences of importance, since clear differences divided the proprietary and middle classes, on the one hand, and the skilled and unskilled working classes on the other, particularly in regard to only children: whereas for the former over 40% of the students were only children, only 32% and 20% respectively of the latter were only children. This, undoubtedly, was a consequence of the exigencies of working class family economy.

How this was so can be appreciated by examining the relationship between birthorder and sibling status, on the one hand, and class, on the other. (Table 16)

The significance of family economy is particulary obvious in working class families: for middle children from both the skilled and unskilled working classes, having working rather than dependent siblings more than doubled the probability of enrollment at GHS; for youngest children of skilled working class parents, the chances were infinitely greater (in a literal sense), while for youngest children with unskilled working class parents, the chances were equal. The pattern of relationships were quite, although not entirely, different for students from the proprietary and middle class students, for in addition to the birthorder differences discussed earlier, there are also some family economy differences.

Thus, while the pattern of relationships for students from the proprietary class was similar to students from the working classes (that is, students with working siblings more likely to attend GHS than those with dependent siblings), the pattern for middle class students was the inverse--both youngest and middle class children had a stronger chance of attending GHS if they had dependent rather than working siblings. The solution to this puzzle will have to wait, however, for a more detailed examination of family economies to be completed in future research using a variety of work/consumption indices created by Michael Katz.

Table 16

Birthorder and Sibling Status, By Class

	Proprietary	Middle	Skilled Working	Unskilled Working	Other	% of Total
Youngest; Working Sib.	7.22	2.04	9.38	20.00	20.32	9.52
Youngest; dependent sib.	4.44	4.08	0.00	20.00	10.53	4.50
Middle; working sib.	18.33	14.29	28.13	13.33	13.16	19.58
Oldest	16.11	16.33	18.75	20.00	5.26	15.87
Only	42.22	44.90	32.29	20.00	34.21	38.36
Total	100.00	100.00	100.00	100.00	100.00	100.00
n	180	49	96	15	38	378

N = 378 Missing Cases = 91

C = .332

Significant at the .001 level.

III. SCHOOL ACHIEVEMENT

1. Length of Stay and Teaching Status

Length of stay at GHS was not merely a matter of family economy and aspirations or student choice--it was also influenced by changes in the length of the program at GHS: in 1850, it was a two year program, in 1860 and 1870, a three year program, and in 1880, a four year program. Accordingly, it is necessary to be quite careful when interpreting length of stay statistics.

This distortion of length of stay by institutional developments necessitates that length of stay be examined in conjunction with another variable that was not distorted in this manner by institutional developments. A variable that indicated whether a student graduated or not would be ideal, but the GHS data set lacks such a variable. It does have, however, a variable that measures whether or not a student entered teaching. Although it is not clear that teachers were required to graduate in order to teach (particularly in the 1850's and 1860's) it is probably safe to assume that the majority did; still, it would be imprudent to assume that the teaching variable can be interpreted unambiguously as an achievement variable.

Several features of the figures reported in Table 17 require comment. First, despite the fact that GHS in 1850 was only a 2 year program, almost 50% stayed longer than 2 years. Although it seems extraordinarily high, almost half of the 1850 entering class repeated one or more grades. Second, in 1860, following the introduction of a 3 year program in 1859, approximately 92% of the students completed at least 3 years, of which the great majority left during or at the end of the third year. By 1870, however, less than half that percentage stayed that length, and none at all completed more than 3 years. The 1880 cohort was different again: 76% had left by the end of the second year. At the moment I do not have a complete explanation for these widely erratic fluctuations in the length of stay, although as I shall argue shortly, somewhat of the mystery disappears if teaching status is introduced as a control variable.

An examination of the relationship between length of stay and the various independent variables in the data set indicates that while most of the independent variables were not associated in a statistically significant fashion with length of stay, five or six were. I will consider each in turn, beginning with those variables not related. First, head's birthplace: although it is noticeable that far fewer students with American born heads of household left the school before the end of the first year, more of them completed at least 2 years of attendance at GHS (see Table 18) (these differences are also reflected in the mean length of stay by heads nativity).

Table 17

Length of Stay, By Cohort

Years	1850	1860	1870	1880	% of Total
0.1-1.0	21.36	4.84	29.79	24.0	19.47
1.1-2.0	28.16	3.23	34.04	52.00	27.86
2.1-3.0	41.75	75.81	36.17	20.00	44.66
3.1-4.0	8.74	16.13	0.00	4.00	8.02
Total	100.00	100.00	100.00	100.00	100.00
n	103	62	47	50	262
Missing	1	19	74	113	267
* Mean	1.92	2.80	1.53	1.46	

N = 262 Missing Cases = 267

C = .448

Significant at .0001 level.

Table 18

Length of Stay by Fathers Nativity

Year	American	Irish	German	Scotish English	% of Total
0.1-1.0	11.71	31.58	25.0	25.0	17.92
1.1-2.0	32.43	23.68	50.50	35.00	31.21
2.1-3.0	49.55	44.74	25.50	25.00	45.09
3.1-4.0	6.31	0.00	0.00	15.00	5.78
Total	100.00	100.00	100.00	100.00	100.00
n	111	38	4	20	173
*Mean	2.03	1.74	1.47	1.69	

N = 173   Missing Cases = 296

C = .294

Not Significant at .05 level.

Second, neither birthplace of spouse nor student's birthplace were related in a statistically significant fashion to length of stay. Third, although birthorder and the siblings variable (combining both birthorder and life cycle status of students siblings) were significantly related to enrollment at GHS, they were not related in a statistically interesting manner to length of stay as a measure of academic achievement (see Tables 19 and 20). And fourth, length of stay was not significantly affected, by head's occupation, head's race or sex, nor by head's ownership of real property.

Length of stay, however, was related in a statistically significant fashion to several variables in the data set. First, it was statistically related to class (although, as noted above, not to heads occupation or nativity). However, the relationship was not systematically linked to class rank: the mean length of stay of students from both the proprietary and middle classes (1.91 and 1.92 years respectively) was significantly lower than the mean length of stay of daughters from the skilled working class (Table 21).

In Table 22 the mean length of stay by class is broken down by cohort. In both 1850 and 1860 the mean length of stay of the skilled working class is considerably larger than for students from any other class--particularly in 1850. In 1870, however, the mean length of stay of skilled working class students fell into last place. By 1880, skilled working class students had recovered some lost ground, but they still lagged behind the mean length of stay of students from the proprietary class. For the period as whole then, students from the

Table 19

Length of Stay, By Birthorder

	Youngest	Middle	Oldest	Only	% of Total
0.1-1.0	20.69	12.86	17.14	23.91	19.03
1.1-2.0	31.03	32.86	28.57	21.74	27.43
2.1-3.0	48.28	45.71	48.57	41.30	44.69
3.1-4.0	0.0	8.57	5.71	13.04	8.85
Total	100.00	100.00	100.00	100.00	100.00
n	29	70	35	92	226
*Mean	1.88	2.02	1.96	2.04	

N = 226 Missing Cases =

C = .209

Not Significant at the .05 level.

Table 20

Length of Stay, By Birthorder & Sibling Status

	Youngest: Working Sibs	Youngest; Dept. Sibs.	Middle; Working Sibs	Middle; Dept. Sibs.	Oldest	Only	% of Total
0.1-1.0	21.05	0.0	7.14	21.43	17.14	23.91	18.30
1.1-2.0	42.11	12.50	35.71	28.57	28.57	21.74	27.68
2.1-3.0	36.84	87.50	52.38	35.71	48.57	41.30	45.09
3.1-4.0	0.00	0.00	4.76	14.29	5.71	13.04	8.93
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00
n	19	8	42	28	35	92	224
*Mean	1.76	2.54	2.05	1.96	1.96	2.04	

N = 224 Missing Cases = 245

C = .297

Not Significant at .05 level.

Table 21

Length of Stay, By Class

Years	Proprietary	Middle	Skilled Working	Unskilled Working	Other	% of Total
0.0-1.0	18.25	20.59	16.67	18.18	29.03	19.47
1.1-2.0	29.37	32.35	18.33	45.45	29.03	27.86
2.1-3.0	49.21	44.12	41.67	36.36	35.44	44.66
3.1-4.0	3.17	2.94	23.33	0.00	6.45	8.02
Total	100.00	100.00	100.00	100.00	100.00	100.00
n	126	34	60	11	31	262
* Mean	1.91	1.92	2.31	1.74	1.73	

N = 262 Missing Cases = 267

C = .321

Significant at the .005 level.

Table 22

Mean Length of Stay, by Class, Controlling for Cohort
1850-1880

	1850	1860	1870	1880	Mean Length
Proprietary	1.81	2.70	1.52	1.57	1.91
Middle	1.76	2.79	1.67	1.27	1.92
Skilled Working Class	2.30	2.96	1.34	1.42	2.31
Unskilled Working Class	1.20	2.90	1.85	1.17	1.74
Other	1.75	2.73	1.50	1.42	1.73
Mean Length	1.92	2.80	1.53	1.46	

skilled working class stayed at GHS longer than students from other classes, but between 1850 and 1880 there was considerable oscillation.

Apart from class, length of stay was statistically related to four other variables--age at entry, age at leaving, teaching status, and grades. First, age at learning: the younger the student on entering the school, the longer she stayed at the school. Students who entered under 14.8 years of age stayed, on average, 2.24 years; between 14.9 and 15.9, 2.01 years; between 16.0 and 16.9, 1.82 years; and over 17, 1.20 years (Table 23).

Second, age of leaving: the younger the student at leaving, the shorter she stayed at GHS. Students who left before their 16th birthday stayed for only .57 of a year; between their 16th and 17th birthdays, 1.03 years; between their 17th and 18th birthdays, 2.05 years; and after their 18th birthday, 2.25 years (Table 24). Finally, length of stay was statistically related to both teaching status and to grades, but before looking at either of these relationships, it is necessary to back-track a little and examine some of the relationships between teaching status and other variables in the data set.

With a few important exceptions teaching status (student entered teaching, student did not enter teaching) was not associated with major family background or student variables. Neither occupation, class, heads nativity, heads sex, heads race, nor students age at entry, age at leaving, grades, birthorder or the siblings variable

Table 23

Length of Stay, By Age at Entry

	Under 14.8	14.9-15.9	16.0-16.9	17 plus	% of Total
0.1-1.0	6.85	16.84	27.45	46.15	19.18
1.1-2.0	27.40	28.42	29.41	38.46	29.29
2.1-3.0	56.16	48.42	31.37	11.54	43.27
3.1-4.0	9.59	6.32	11.76	3.85	8.16
Total	100.00	100.00	100.00	100.00	100.00
n	73	95	51	26	245

N = 245 Missing Cases =

C = .338

Significant at .0002 level.

Table 24

Length of Stay, By Age at Leaving

	<15.9	16.0- 16.9-	17.0 17.9	18+	% of Total
0.1-1.0	46.67	15.29	10.39	11.54	18.53
1.1-2.0	51.11	27.06	19.48	23.08	28.19
2.1-3.0	2.22	57.65	59.74	40.38	45.17
3.1-4.0	0.00	0.00	10.39	25.00	8.11
Total	100.00	100.00	100.00	100.00	100.00
n	45	85	77	21	259
Mean	0.57	1.03	2.05	2.25	2.32

N = 259 Missing Cases =

C = .506

Significant at the .0001 level.

Table 25

Teaching, By Cohort (1850-1970 only)

	1850	1860	1970	% of Total
Teaching	78.85	56.79	59.50	65.36
Not Teaching	21.15	43.21	40.50	34.64
Total	100.00	100.00	100.00	100.00
n	104	81	121	306

N = 306 Missing Cases = 163

C = .200

Significant at the .005 level

Table 26

Teaching, By Class

	Proprietary	Middle	Skilled Working	Unskilled Working	Other	% of Total
Teaching	52.63	52.38	67.03	46.15	55.26	43.66
Not Teaching	47.37	47.62	32.97	53.85	44.74	56.34
Total	100.00	100.00	100.00	100.00	100.00	100.00
n	171	42	91	13	38	355

N = 355   Missing Cases = 114 (113 from 1880 cohort)

C = .129

Not significant at the .05 level.

were related in a statistically significant fashion. Indeed, the only two variables with which it was related in a statistically significant manner were cohort and length of stay. The data reported in Table 22 indicate a considerable decline in the percentage of students who entered teaching between 1850 and 1860--from 78.85% to 56.79%. Since 1859-60 has already been identified as an important year in the institutional history of the school, the dramatic decline between 1850 and 1860 is obviously interesting.

In Table 26, the percentage of students entering teaching is broken down by class. Although the overall association between class and teaching status was not significant, the percentage of students from the skilled working class entering teaching was much higher than the percentage of students entering teaching from other classes, and more than half again as high as the mean for all classes. The figures reported in Tables 27 and 28 are even more interesting however, for when the relationship between teaching status and class is broken down by cohort, it is apparent that although the drop in 1860 in the percentage of students from each class entering teaching affected all classes, it did not affect all classes equally. In fact, the decline was concentrated in two classes--students from the proprietary and middle classes. The decline in the percentage of students from the skilled working class entering teaching was less than half the percentage decline of students from the proprietary and middle classes. (The percentage decline of students from the unskilled working class can safely be ignored given the size of the n's

Table 27

Teaching Status, by Class, Controlling for Cohort

Class	1850 Not Teaching	1850 Teaching	1860 Not Teaching	1860 Teaching	1870 Not Teaching	1870 Teaching	% Decline Between 1850 & 1860
Proprietary	20.0	80.0	48.6	51.3	43.5	56.4	45.6
Middle	28.5	71.4	44.4	55.5	41.6	58.3	41.7
Skilled	13.7	86.2	32.1	67.8	37.0	62.9	21.3
Unskilled	0.0	100.0[a]	50.0	50.0[b]	33.3	66.6	[50]
Other	33.3	66.6	33.0	66.6	35.7	64.2	[0.0]
Mean	21.15	78.85	43.21	56.79	40.50	59.50	

[a] n = 1

[b] n = 2

Table 28

Mean Length of Stay, by Class, Controlling for Teaching

Class	Length Nonteaching	 Teaching	 Mean Length
Proprietary	1.75	2.08	1.91
Middle	1.63	2.21	1.92
Skilled Working Class	1.94	2.49	2.31
Unskilled Working Class	1.40	2.32	1.74
Other	1.51	1.99	1.73
Mean Length	1.71	2.22	
C[a]	.53	.28	
Level of significance[a]	.0005	n.s.	

[a] Results of independent bivariate analysis of relationship between length of stay and class after controlling for teaching status.

involved.) This being the case, and if we can assume that enrollment patterns reflect variations in demand, then it would appear that the effort, albeit short-lived, in 1860 to establish an academic program was strongly endorsed by, and may even have originated from, the proprietary and the middle classes. The skilled working class on the other hand looked to teaching as by far and away the most desirable occupation for females, largely because of its association with femininity, mobility, and respectability. They were simply not particularly interested in an academic education; rather they were interested in the practical and serviceable teaching credentials that GHS conferred.

The second variable with which teaching status was statistically linked was length of stay. The mean length of stay of those students who entered teaching was considerably longer than the mean length of those students who did not enter teaching (2.21 and 1.71 years respectively. Again it should be noted that all figures are exclusive of 1880). At least 34% of the students entering teaching did so by the end of their second year the great majority during or at the end of their third year (Table 29). Since length of stay was influenced, however, by changes in the length of the program, it is necessary to control for cohort. When this is done, the differences are quite striking (Table 30). In 1850, almost identical percentages of students who entered teaching and who did not enter teaching completed between 2 and 3 years of schooling at GHS (41.9% and 40.9% respectively) although many more students (78%) entered teaching than those who did

Table 29

Length of Stay By Teaching Status
(1850-1870)

	Entered Teaching	Did Not Enter Teaching	% of Total
0.1-1.0	13.33	25.98	19.47
1.1-2.0	20.74	35.43	27.86
2.1-3.0	55.56	33.07	44.66
3.1-4.0	10.37	5.51	8.02
Total	100.00	100.00	100.00
n	135	127	262
*Mean %	51.53	48.47	
*Mean length of Stay	2.22	1.71	

N = 262 Missing Cases = 207

C = 265

Significant at the .0002 level.

not (22%). Why they stayed more than the required 2 years (a fact that I have checked and doubled checked) is not at all apparent; it is hard to believe that such a high proportion repeated grades. Almost identical percentages of students left before or at the end of 2 years (approximately 49%), although higher percentage of those who entered teaching left during their second year than those who did not. Almost 20% of those who entered teaching did so during or at the end of their first year, suggesting that either graduation was not necessary for teaching, or that they entered the school with a level of education equivalent to the first year of the course of study at GHS. There is no way of knowing which.

The most interesting feature of the pattern in 1860--the stark contrast with the 1850 figures--has already been commented on. But there is one further feature that deserves notice as well, namely, that almost twice as many students entered teaching (64%) as those who did not, but an identical--and very high percentage--stayed on to their third year (75% and 77.2% respectively). The majority of the remainder stayed more than 3 years. Only a very small proportion (10% of those who did not teach, and 7.5% of those who did) stayed 2 years or less, a fact that suggests that either students were required to graduate before entering teaching or some small percentage entered GHS with an education comparable to the first or second year of the GHS program.

In 1870 (like 1860, a year with a 3 year program) the profiles of those that entered teaching and those that did not differed dramatically for the first time: whereas almost 80% of those who entered teaching stayed on for their third year, only 18% of those who did not enter teaching did so. Of these who stayed less than 3 years, those students who did not enter teaching were evenly divided between 1 and 2 years, while for those who did enter teaching, all of them remained for their second year.

2. Grades

At CHS between 1850 and 1920 and at GHS between 1901 and 1922, grades were easily the overwhelmingly important factor influencing school achievement. At both schools, however, grades themselves were not influenced in any significant manner by any of the available independent variables--in particular, they were not influenced by class or occupation--prompting the conclusion that both CHS and GHS were meritocratic in two senses: first, that grades were overwhelmingly the important influence upon all of the measures of school achievement available (length of stay, grades completed, and graduation), and second, that grades themselves were a function of effort or ability, or some combination of the two, and not of family background. That is, the process of achievement at CHS and GHS was meritocratic in both the secondary sense and the tertiary sense. It is of no small interest then to determine whether the process of school achievement at GHS between 1850 and 1870 fulfills either of these two conditions. The relationship between grades and a variety of measures of family background --that is, the secondary or weak meritocratic claim--will be examined

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TABLE 30

LENGTH OF STAY BY TEACHING STATUS, CONTROLLING FOR COHORT

(1850-70)

	1850		1860		1870	
ength	Non-Teaching	Teaching	Non-Teaching	Teaching	Non-Teaching	Teaching
.1-1.0	27.2	19.7	4.5	5.0	42.4	0.0
.1-2.0	22.7	29.6	4.5	2.5	39.3	21.4
.1-3.0	40.9	41.9	77.2	75.0	18.1	78.5
.1-4.0	9.0	8.6	13.6	17.5	0.0	0.0
TAL	100.00	100.00	100.00	100.00	100.00	100.00
N	22	81	22	40	33	14
%	21.15	78.85	43.21	56.79	59.50	40.50
EAN LENGTH	1.93	1.92	2.75	2.82	1.25	2.22

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first, and then, following that, the relationship between length of stay and teaching, on the one hand, and grades on the other.

But first, before proceeding with either of these analyses, a brief review of changes in the distribution of grades over time is in order. An examination of the relationship between grades and cohort reveals that between 1850 and 1860 the mean GPA of all students dropped slightly while between 1860 and 1870 it rose very sharply, due to the very large (and equally inexplicable) jump in the proportion of students attaining an A-level grade in 1870 (Table 31). It is this jump that undoubtedly explains the level of significance. When the relationship between grades and cohort is examined after controlling for class, it is clear that the dip in the mean GPA between 1850 and 1860 was characteristic of students from all classes, and again that the jump in the mean GPA between 1860 and 1870 was also characteristic of all classes (Table 32). No one class then seemed to have been exempted from the changes in mean GPA over time.

Two further issues raised by these results deserve comment. The first is the fact that in each year students from the unskilled working class secured a higher mean GPA than students from any other class. The very small number of students from the unskilled working class throws some doubt on the reliability of this pattern, however. The second and more important point is that when the relation between grades and class is examined alone, that is, without controlling for cohort or any other variable, the relationship between grades and class is not statistically significant (Table 33). Moreover,

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none of the remaining measures of family background --head's occupation, race, sex, literacy, ownership of real property. -- or student's birth-order, sibling status, age of entry and age of leaving are related in a statistically significant fashion to grades. The only exception was the relationship between grades and head's ownership of personal property. On closer examination, however, the relationship turns out to be of no real interest, since 84% of the data set were without data on personal property, and the only division produced by the contingency table was between those heads owning less than $350 of personal property (some 80% of those without missing values) and those owning over $350.

The absence of a statistically significant relationship between grades and any (with the one exception discussed above) of the measures of family background or family economy constitutes a strong case for claiming that the conditions necessary to satisfy the requirements of a meritocratic process (in the tertiary) of school achievement at GHS between 1850 and 1870 have been fulfilled. At least this appears to be the case on the basis of a bivariate analysis; on the section that follows the results of the multivariate analysis will be discussed. For the remainder of this section the relationship between length of stay and grades, and between teaching status and grades, will be examined from the perspective of assessing whether a meritocratic relationship between grades and the two measures of school achievement holds.

First, the relationship between length of stay and grades. This relationship can be initially examined from two perspectives. The

Table 31

Grades, By Cohort, 1850-1870

Grade	1850	1860	1870	% of Total
A	4.08	4.94	66.12	29.33
B	32.65	18.52	29.75	27.67
C	41.84	49.38	4.13	28.67
D	21.43	27.16	0.00	14.33
Total	100.00	100.00	100.00	100.00
n	98	81	121	
*Mean GPA	2.55	2.48	3.17	

N = 300   Missing Cases = 6

Significant at the .0001 level.

TABLE 32

MEAN GPA, BY CLASS, CONTROLLING FOR COHORT

(1850 - 1870)

		GPA			
CLASS	N	1850	1860	1870	MEAN GPA
PROPRIETARY	140	2.56	2.54	3.19	2.53
MIDDLE	35	2.53	2.40	3.20	2.73
SKILLED WORKING	82	2.58	2.43	3.06	2.69
UNSKILLED WORKING	9	2.60	2.56	3.31	3.07
OTHER	32	2.48	2.41	3.25	2.81
MEAN GPA		2.55	2.48	3.17	

Table 33

Grades, By Class, 1850-1870

Grades	Proprietary	Middle	Skilled Working	Unskilled Working	Other	% of Total
A	36.43	20.00	18.29	55.56	31.25	29.53
B	25.00	28.51	32.93	22.22	28.13	27.85
C	25.71	37.14	34.15	11.11	18.75	28.19
D	12.86	14.29	14.63	11.11	21.88	14.43
Total	100.00	100.00	100.00	100.00	100.00	100.00
n	140	35	82	9	32	

N = 298 Missing Cases = 169

C = .226

Not Significant at .05 level.

Table 34

Length of Stay By Grades
(1850-1870)

Length	A	B	C	D	% of Total	*Mean GPA
0.1-1.0	30.77	20.69	11.11	13.16	17.87	2.81
1.1-2.0	30.77	25.86	13.89	18.42	21.26	2.78
2.1-3.0	38.46	50.00	65.28	42.11	51.69	2.64
3.1-4.0	0.00	3.45	9.72	26.32	9.18	2.34
Total	100.00	100.00	100.00	100.00	100.00	
n	39	58	72	38	201	
* Mean Stay	1.53	1.96	2.40	2.42		

N = 207   Missing Cases = 262

C = .370

Significant at .0001 level.

first is to examine differences in the length of stay by grade levels (as in Table 34), while the second reverses the procedure (as in Table 35). It is immediately obvious that however the relationship is examined, length of stay and grades are indeed related in a manner that satisfies even a very rigorous test of statistical significance, but that they are not related in a manner that supports a meritocratic hypothesis. Contrary to what existed at CHS between 1850 and 1920, and at GHS after 1900, grades and length of stay were not positively but negatively related: the shorter the stay, the higher the grade; the longer the stay, the lower the grade. Thus, for example, the mean GPA for those students who stayed 1 year or less was 2.81, the GPA of those students who stayed between 1 and 2 years was 2.78, for 2 to 3 years, 2.64, and for 3 to 4 years, 2.34 (Table 34). Alternatively, the mean length of stay of A-level students was 1.53; of B-level students, 1.96; of C-level students, 2.40; and of D-level students, 2.42 (Table 35). Not only was the relationship between grades and length of stay not direct or positive, but negative (or inverse) and linear at that. Moreover, when the relationship is examined after controlling for cohort, with one or two minor exceptions, the inverse relationship remains fundamentally unchallenged whether it is measured by changes in mean GPA by length of stay or by changes in mean length of stay by grade level (Table 36).

In response to these findings it might be argued by an ardent defender of meritocratic theory, that these findings do not decisively disprove the existence of a meritocratic relationship between length

TABLE 35

GRADES BY LENGTH OF STAY (1850 - 1870)

GRADES	0.1-1.0	1.1-2.0	2.1-3.0	3.1-4.0	%of Total	MEAN LENGTH OF STAY
A	32.43	27.27	14.02	0.0	18.84	1.53
B	32.43	34.09	27.10	10.53	28.02	1.96
C	21.62	22.73	43.93	36.84	34.78	2.40
D	13.51	15.91	14.95	52.63	18.36	2.42
TOTAL	100.00	100.00	100.00	100.00	100.00	
N	37	44	107	19	207	
MEAN GPA	2.81	2.78	2.64	2.34		

N = 207

C = .370

Significant at the .0001 level.

Table 36

Mean GPA by Length of Stay, Controlling for Cohort

Length	1850	GPA 1860	1870
0.1-1.0	2.55	2.95	3.15
1.0-2.0	2.52	2.64	3.20
2.1-3.0	2.60	2.50	3.14
3.1-4.0	2.39	2.30	--

Mean Length of Stay by Grade Level, Controlling for Cohort

Grade	1850 Length	1860 Length	1870 Length
A	1.72	2.05	1.44
B	1.90	2.42	1.69
C	2.09	2.87	1.85
D	1.85	3.12	--

and grades, since the best students might in fact have left the school after only having completed one year while the least competent students stayed the longest (perhaps because they repeated grades). In the absence of data on grades repeated, or grades completed, or graduation and teaching requirements, this argument can not be definitely proven or disproven. It is, however, possible to test the claim with a variety of indirect analyses by examining the relationship between length of stay and grades after controlling for cohort and teaching status. But before doing this, the nature of the relationship between teaching status and grades need to be briefly reviewed.

The general relationship between teaching status and grades for the 1850-1870 period as a whole is reported in Table 36. The relationship was not statistically significant: the mean GPA of those students who entered teaching was only a fraction higher than the mean GPA of those who did not. When the relationship is examined after controlling for cohort (Table 37), it is apparent that the relationship between grades and teaching status is not entirely stable over time, with a 12 point difference in 1850 reduced to 6 points by 1860 and then increasing to a 10 point spread by 1870. In each year, however, the mean GPA of those students entering teaching remained higher than the GPA of those not entering teaching. This is an intriguing result, since if teaching is viewed, even if only in attentuated sense, as a measure of educational achievement, then we are faced with a situation in which length of stay and grade are not related in a meritocratic

Table 36[b]

Grades, By Teaching (1850-70)

Grades	Not Teaching	Teaching	% of Total
A	27.36	30.41	29.33
B	25.47	28.37	27.67
C	31.13	27.32	28.67
D	16.04	13.40	14.33
Total	100.00	100.00	100.00
n	106	194	300
Mean GPA	2.76	2.80	

N = 300 Missing Cases = 6

C = .063

Not significant at the .05 level.

Table 37

Mean GPA by Teaching Status, Controlling for Cohort 1850-1870

	GPA			
Teaching Status	1850	1860	1870	Mean GPA
Nonteaching	2.46	2.44	3.12	2.76
Teaching	2.58	2.51	3.21	2.80

fashion, but teaching status and grades are. This being the case then it is useful to examine the interrelationships between length of stay, teaching status, and grades.

In Tables 38 and 39, the relationship between length of stay and grades after controlling for teaching status is reported. With teaching status controlled for, the relationship between length and grades becomes considerably more nuanced, although hardly meritocratic. Thus, although mean GPA decreases as length increases from 1 to 2 years for nonteachers, it declines sharply for those who stayed more than 2 years; the mean GPA for teachers oscillates as length increases: dropping as length increases from 1 to 2 years, increasing as length increases from 2 to 3 years, and dropping again as length increases from 3 to 4 years (Table 38). In effect, the inverse relation between length of stay and grades weakens considerably after controlling for teaching status, although it does not present a meritocratic picture by any means. When the relationship is turned around, however, that is, when we examine changes in the mean length of stay by grade level (Table 39), mean length of stay increases as grade level decreases both for students who entered and who did not enter teaching. The only exception is that the mean length of stay of D-level students who entered teaching was a little lower than the mean length of stay of C-level students (2.36 and 2.43 respectively). So, although a few wrinkles appear in the inverse relationship between length of stay and grades when teaching status is controlled for, for the most part the relationship remains resolutely nonmeritocratic.

Table 38

Mean GPA by Length of Stay, Controlling for Teaching Status (1850-1870)

	Mean GPA		
Length	Nonteaching	Teaching	Mean GPA
0.1-1.0	2.93	2.65	2.81
1.1-2.0	3.01	2.60	2.78
2.1-3.0	2.60	2.66	2.64
3.1-4.0	2.22	2.39	2.34
Mean GPA	2.76	2.80	

Table 39

Mean Length of Stay, by Grades, Controlling for Teaching (1850-1870)

	Length of Stay		
Grade	Nonteaching	Teaching	Mean Length of stay
A	0.79	1.96	1.53
B	0.84	2.11	1.96
C	0.86	2.43	2.40
D	1.04	2.36	2.42
Mean Length of Stay	1.71	2.22	

Yet Table 39 can also be read in a manner that lends credence to a meritocratic interpretation of the relationship between length of stay and teaching if we view grades as a control variable. From this perspective the difference in the mean length of stay between those students who entered teaching and those who did not is quite striking: the mean length of stay of A-level students who entered teaching was 1.96 while that of A-level students who did not enter teaching was 0.79; for B-level students entering teaching, 2.11, while for those who did not enter teaching, 0.84; for C-level students entering teaching, 2.43, while for those not entering teaching, 1.04; for D-level students entering teaching 2.36, while for those students not entering, 1.04. In effect, after controlling for grade level, for each grade level the mean length of stay of those students who entered teaching was at least twice as long as the mean length of those students who did not enter teaching.

Given these differences then it seems reasonable to conclude that teaching status can indeed be regarded as an achievement variable and that along this axis, at least, school achievement at GHS between 1850-1870 was unambiguously meritocratic. And, of course, there is evidence already discussed that further supports this argument: (i) the fact that the mean GPA of teachers did not go down uniformidly as length of stay increased, but oscillated instead; (ii) the mean GAP of those who did not enter teaching was lower than the mean GPA of those who did not enter teaching was lower than the mean GPA of those who did; and (iii) the mean length of stay of students who taught was for every grade level at least twice as long as the mean length of stay of those students who did not enter teaching. For those students who entered teaching at least, the relationship between length of stay and grades had its meritocratic features. In effect, the process of school achievement was bifurcated by occupational destiny, but not apparently, over time. It is tempting to see in this bifurcation a forewhadowing of the differentiation (and undoubtedly, the stratification) of processes of school achievement between the meritocratic processes of achievement at GHS after it had been transformed into a purely academic high school for girls, opened in 1910. Although the process of school achievement at the Normal School has not yet been studied, it is clear that by 1901 the process of school achievement at GHS was strongly meritocratic, while at William Penn High School (a vocational school for girls) the process of school achievement was not meritocratic but indeterminate and random.

Before turning to multivariate analyses of length of stay, teaching status, and GPA, it is useful to quickly examine, first, the relationship between length of stay and grades after controlling for class, and second, the relationship between grades and teaching status, again after controlling for class. From Table 40, it appears that controlling for class does no damage whatsoever to the inverse relationship between length of stay and grades: it was applicable to

Table 40

Mean Length of Stay, by Grade, Controlling for Class (1850-70)

	Length of Stay				
Class	A	B	C	D	Mean Length
Proprietary	1.49	1.82	2.34	2.66	2.83
Middle	1.50	1.64	2.52	1.82	2.73
Skilled Working Class	1.50	2.19	2.53	3.02	2.69
Unskilled Working Class	2.33	1.65	1.20	2.90	3.07
Other	1.22	2.21	2.10	1.40	2.81
Mean Length	1.53	1.96	2.40	2.42	

unskilled working class students as it was to students whose fathers were proprietors, as characteristic of middle class students as it was of students from the skilled working class. But if the inverse relationship between length of stay and grades emerges unscathed after controlling for class, the meritocratic relationship between grades and teaching does not (Table 41). Although the mean GPA of those students entering teaching was higher than the mean GPA of the students that did not enter teaching for students from the skilled and unskilled working classes (as well as the residual class), this was not the case for students from the proprietary and middle classes. While it can thus be argued that in general a meritocratic explanation of the relation between teaching status and grades can be given, this obscures the fact that the general relation was merely an average, and that in fact, when broken down by class, the meritocratic relation between teaching and grades was only true of the skilled and unskilled working classes (and "others"). The significance of this will be discussed shortly.

3. Multivariate Analyses

One important limitation of bivariate analysis is that, even allowing for the possibility of entering control variables into the analysis, it is not possible to enter more than one control variable at a time and have any real chance of interpreting the results in a meaningful way. To examine the relationship between two variables while controlling for a number of variables simultaneously, multivariate analysis--in the present case, MCA--is necessary. In the

Table 41

Mean GPA, by Teaching Status, Controlling for Class 1850-1870

	Did Not Enter Teaching	Teaching	Mean GPA
Proprietary	2.82	2.84	2.83
Middle	2.75	2.71	2.73
Skilled Working	2.63	2.71	2.69
Unskilled Working	2.88	3.16	3.07
Other	2.75	2.85	2.81
Mean GPA	2.76	2.80	

pages that follow three dependent variables--length of stay, teaching status, and grades--are each analyzed using MCA.

First, length of stay. Five independent variables (or in MCA, factors) that were each linked in a statistically significant fashion to length of stay--class, grades, cohort, teaching status, and age at entry--constituted the basic model used to examine length of stay. Three variables (heads birthplace, students birthorder, and siblings status were excluded because their relationship to length of stay did not prove to be statistically significant in the bivariate analysis. Another variable, age at leaving, was excluded because it was a variable computed from age at entry and length of stay).

The results of the multivariate analysis are displayed in Table 42. Each of the factors were statistically significant. Class was statistically significant at the .05 level but its effect upon length of stay was not systematically linked to class status: the unadjusted and adjusted means of students from the skilled working class easily exceeded the respective means of students from the proprietary and middle classes, and the adjusted mean of students from the unskilled working class even exceeded the adjusted mean of students from the skilled working class. (The value of the unadjusted means in Table 42 are slightly different from the means reported in Table 21, specifically in order of class status: 1.91, 1.92, 2.31, 1.74, and 1.73.)

From the earlier bivariate analysis of the relationship between length of stay and class I concluded that part of the explanation of

Table 42

MCA for Length of Stay

Grand Mean = 2.52

Factor	N	Unadjusted Mean	Eta	Adjusted Mean	Beta	Level of Significance
Class						
Proprietary	85	2.01		2.06		
Middle	27	2.09		1.95		
Skilled Working	49	2.43		2.28		
Unskilled Working	7	2.06		2.34		
Other	22	1.90		2.14		
			0.21		0.13	.05
Grade						
A	37	1.64		1.77		
B	53	1.92		1.98		
C	65	2.43		2.30		
D	35	2.47		2.36		
			0.39		0.22	.0001
Cohort						
1850	87	2.01		1.88		
1860	56	2.88		2.62		
1870	47	1.63		1.97		
			0.51		0.35	.0001
Teaching Status						
Nonteaching	73	1.82		1.88		
Teaching	117	2.30		2.26		
			0.24		0.18	.01
Age of Entry						
less than 14.8	59	2.41		2.30		
14.9-15.9	77	2.11		2.15		
16.0-16.9	39	1.99		2.14		
17.0 plus	15	1.36		1.50		
			0.30		0.22	.01

Table 42--Continued

R^2 = .376

R^2 adjusted for df = .330

R^2 (adj.) without class = .329

R^2 (adj.) without grade = .326

R^2 (adj.) without cohort = .281

R^2 (adj.) without teaching = .304

R^2 (adj.) without age of entry = .295

R^2 (adj.) due to class alone = .001 (3%)

R^2 (adj.) due to grades alone = .004 (1.2%)

R^2 (adj.) due to cohort alone = .049 (14.8%)

R^2 (adj.) due to teaching alone = .026 (7.8%)

R^2 (adj.) due to age of entry alone = .035 (10.6%)

N = 469 Missing Cases = 279 (59.5%).

the much higher mean length of stay of students from the skilled working class is to be found in the relationship between two further facts: (1) that a much higher proportion of such students than students from other classes entered teaching, and (2) the fact that students who entered teaching, stayed, on average, longer than those that did not. This is confirmed by the computations tabulated earlier: both the unadjusted and adjusted means of those students who entered teaching were considerably higher than the respective means of those students who did not. But this does not explain all of the difference between the students from the skilled working class and students from other classes--the beta for class increases by a mere .01 when teaching is removed from the model, while the level and relationship to each other of the adjusted means remains unaffected. Neither do class differences in grades, cohort, age at entry, age at leaving, birthorder, or siblings explain the difference--in both bivariate analyses controlling successively for each of these variables, and in the multivariate analysis above, controlling for all of the variables simultaneously, the relationship between length of stay and class remains relatively constant.

The bivariate analysis earlier of the relationship between length of stay and grades suggested, despite a number of qualifications, that on balance length of stay was inversely related to grades, thereby confounding meritocratic expectations of the relationship between length of stay and grades: as length of stay increased, grades decreased, and as grade decreased, length increased. When cohort was controlled for, the relationship was less pronounced, but it still held; when controlled for class, birthorder, siblings, and age, the relationship altered very little. Only when teaching status was controlled for did the relationship appear more tenuous: for non-teachers, GPA declined as length increased, but not as length increased from 1 to 2 years; for teachers, mean GPA declined as length increased from 1 to 2 years and from 3 to 4 years, but it increased as length increased from 2 to 3 years. However, while it is true that the mean length of stay of students entering teaching was two to three times the mean length of stay of students who did not enter teaching, for both groups of students the mean length of stay increased as grade level decreased. Similarly, when subjected to multivariate analysis, the direction of both the unadjusted and adjusted means is unambiguous, systematic, and resilient: length of stay increases as grade decreases--even after, in the case of the adjusted means, controlling for the effects of cohort, teaching status, class, and age at entry.

One could be excused for being at a loss to explain these results, since they simply confound all meritocratic expectations. Given that cohort and teaching status are both included in the model, and that the mean length of stay of students who entered teaching was significantly longer (in the statistical sense) than the mean length of stay of those who did not enter teaching (2.22 and 1.71, respectively), it can hardly be argued that the bright (or academically successful) students stayed at GHS for shorter periods of time than the less academically successful students. The answer to the riddle--or at least one answer--appears to reside in the closeness of the mean GPA of both groups of students to each other and the miniscule contribution grades made to R^2. First, the mean GPA of students entering teaching was only a fraction higher than the mean GPA of those not doing so--2.80 and 2.76, respectively, and not statistically significant, even at the .05 level. And second, grades explained only .004 or 1.2% of the variance in length of stay; moreover, the model as a whole explained no more than 33% of the variance of length of stay. These considerations point to the conclusion that while length of stay was inversely related to grades, grades themselves had little effect on how long students stayed at GHS or whether they entered teaching or not.

Happily, the remaining factors in the model do not present a puzzle. The strength of the eta, the beta, and the contribution of cohort to R^2 reflects the influence of changes in the length of the course at GHS upon length of stay. The contribution of teaching status has already been discussed. Finally, the multivariate model adds only a little to what we already knew about the relationship between length of stay and age at entry, specifically, that length of stay decreased as age of entry increased, or conversely, that length of stay increased as age of entry increased. What MCA does permit is the assessment of the size of the net contribution of age of entry to explain variations in length of stay--and at .035 or 10.6% for age of entry, a relatively respectable contribution.

To assess whether the basic relationships between the factors changed over time, separate runs of the model (minus cohort) were run for each separate cohort, although this involved relying on very small n's for each cohort. Nevertheless, even with that qualification in mind, several features of Table 43 are worth noting. First, between 1850 and 1860/1870, the significance (as measured by both the eta and beta) of class declined; indeed, between 1850 and 1860 the beta for class was cut two-thirds, while between 1850 and 1870, it was cut by a little more than half. Second, between 1850 and 1860 the significance of grades increased considerably--from a beta of .14 in 1850 it jumped by almost a factor of 4 to .55--before dropping sharply again by 1870. For some reason the inverse relation between length of stay and grades grew more extreme between 1850 and 1860, before dropping back in 1870 to a level a little higher than the strength of the relation in 1850. Third, the strength of the relationship between length of stay and teaching status declined between 1850 and 1860 but it increased dramatically between 1860 and 1870. The reason for this can be seen in Table 28: the mean length of stay of students who entered teaching and those who did not was very close to pavity in both 1850 and 1860, whereas in 1870 the mean length of stay of teachers who entered teaching was almost twice the mean length of stay of those that did not. Finally, although the strength of the relationship between length of stay and age at entry oscillated a little between 1850 and 1870, compared to the fluctuations over time in the relationship between length and other factors, the relationship

Table 43

Eta's and Beta's of MCAs for Length,
Controlling for Cohort

	1850		1860		1870	
Factors	Eta	Beta	Eta	Beta	Eta	Beta
Class	.32	.31	.16	.10	.16	.14
Grades	.14	.14	.54	.55	.17	.23
Teaching	.08	.10	.02	.06	.54	.52
Age	.35	.33	.20	.18	.27	.20
R^2	.234		.339		.384	
R^2 (adj.)	.133		.185		.190	
n	87		56		47	

between length and age was relatively stable across time.

Although neither heads birthplace, birthorder, and siblings were not related in a statistically significant manner to length of stay in bivariate analysis, separate MCAs were run for length of stay including them as factors. In no case did any of the factor assume statistical significance, although in the case of heads birthplace, with class, cohort, grade, and teaching status as additional factors in the model, the beta was moderately strong (.16), in large part due to the low means for students with heads from Germany (1.52), and England and Scotland (1.75), while students with heads from the USA (2.10) and Ireland (2.12) were five and seven points above the grand mean (2.05) for this model.

Next, MCAs were run with teaching status as the dependent variable and class, grades, cohort, heads birthplace, and age of entry as factors. The results are reported in Table 44. Overall, the model was not statistically significant, and explained only a miniscule fraction of the variance (.044 after adjustment for degrees of freedom). All of the factors with the sole exception of cohort were not statistically significant. However, there are several features in the table worth noting.

First, the quite striking high proportion of students entering teaching from skilled working class homes noted in the bivariate analysis (see Table 26) remains--indeed, even increases--after the influence of other factors has been controlled for. It is also noticeable that although only a very small percentage of the enrollment

Table 44

MCA for Teaching Status

Grand Mean = .64

Factor	N	Unadjusted Mean	Eta	Adjusted Mean	Beta	Level of Significance
Class						
Proprietary	77	.59		.58		
Middle	23	.61		.61		
Skilled Working	47	.75		.77		
Unskilled Working	8	.64		.71		
Other	24	.64		.61		
			.14		.17	n.s.
Grade						
A	61	.69		.81		
B	53	.61		.59		
C	43	.65		.56		
D	22	.55		.43		
			.10		.27	n.s.
Cohort						
1850	57	.78		.84		
1860	35	.52		.60		
1870	87	.60		.52		
			.20		.29	.005
Heads Birthplace						
USA	115	.68		.68		
Ireland	36	.53		.53		
Germany	7	.43		.46		
England and Scotland	21	.67		.67		
			.15		.14	n.s.
Age at Entry						
less than 14.8	56	.70		.66		
14.9-15.9	69	.63		.64		
16.0-16.9	37	.62		.64		
17.0 plus	17	.53		.57		
			.10		.05	n.s.

Table 44--Continued

Factor	N	Unadjusted Mean	Eta	Adjusted Mean	Beta	Level of Significance
R^2 = .124						
R^2(adj. for df) = .044						
n = 179.						
Results with siblings substituted for heads birthplace						
Siblings (Grand Mean =.65 R^2(adj) = .026						
Youngest; dependent sibling	14	.71		.66		
Middle; working sibling	3	.33		.26		
Middle; dependent sibling	39	.61		.61		
Oldest	30	.70		.75		
Only	98	.65		.67		
			.11		.21	n.s.

at the school, students from unskilled working class homes also entered teaching in very high proportions; moreover, after controlling for the effects of other factors, they were second only to students from the skilled working class in entering teaching.

Second, in the bivariate analysis of the relationship between teaching and grades, students entering teaching were found to have a slightly higher mean GPA than those not entering (2.80 and 2.76, respectively) although the differences were not statistically significant (see Table 36). When examined after controlling for cohort, in each year the GPA of those entering teaching was higher than students not entering teaching. When controlled for class, students from the proprietary and middle classes who entered teaching had lower grades than those who did not enter teaching, but students from the remaining classes who entered teaching had higher grades than those who did not (Table 41). Moreover, the mean length of stay of students entering teaching was significantly longer than students who did not (2.22 and 1.71, respectively)(Table 39).

All this evidence points to a somewhat shaky but still meritocratic association between teaching status and grades at GHS between 1850 and 1870. Multivariate analysis confirms thus: with one exception (C-level students) the unadjusted means all declined as grades declined; after adjusting for the influence of all other factors, and with no exceptions, the percentage of students entering teaching declined as grades declined. The very high percentage of A-level students entering teaching is particularly noticeable.

Third, the unadjusted means for cohort indicate considerable oscillation in the percentage of students entering teaching by year, dropping sharply between 1850 and 1860, before rising again in 1870. (The percentages in Table 42 are quite close to the percentage reported in Table 25; overall, students entered teaching at a 2:1 ratio over those who did not.) After controlling for the influence of other factors, however, the oscillation disappears to be replaced by a steady decline between 1850 and 1870, with the sharpest decline occurring in the decade after 1860. The long-term secular decline between 1850 and 1870 in the percentage of students entering teaching (disguised somewhat in the unadjusted means, but apparent in the adjusted means), suggests that the shift from the combined teacher-training and academic program (introduced in 1860 after the abortive effort to establish a largely academic high school in 1859) to the all academic program introduced in 1893 followed a protracted decline in parent and student interest in teacher training as the primary objective of the school. The reforms of 1893 can not be attributed simply to the successful political activities of the reformers but to a long-term decline in interest in teaching as a career and GHS as a teacher-training institution. Without that decline it is unlikely that the efforts of the reformers would have been any more successful than they had been in 1859. Indeed, the failure of the 1859 reforms can, in retrospect, be linked to their prematurity--the 1859 reforms failed, in part, because they were not predicated upon a solid and resilient demand for them.

Finally, the last two factors in the model, heads birthplace and age at entry, do not suggest any relationships between teaching status and the two factors. Neither of the two factors were statistically significant, although some differences between categories within each variable exist. For example, students with USA born heads entered teaching slightly more often than students with heads born elsewhere; students with German born heads entered teaching at a lower rate than students from any other category. (It is also noticeable that the adjusted means were identical with the unadjusted means, suggesting that other factors in the model exerted no influence upon heads nativity as a determinant of teaching status.) Again, as with length of stay, the relationship between teaching status and age of entry was simple and direct: the younger the student entered the school, the more likely she was to enter teaching. The fact that the beta for age of entry was only half the value of eta suggests that the influence of age of entry upon teaching status was strongly mediated by other variables, in particular, length of stay: students who entered the school at an early age entered teaching more often than students who entered at a later age because the younger entrants stayed longer--they did not stay longer because they entered teaching.

In the bivariate analysis of the relationship between teaching status and siblings the relationship was found not to be statistically significant. Still, the number of students at GHS who were only children (at least living at home) was a relationship begging for further analysis. Although the relationship between teaching and siblings was insignificant, the beta was almost twice the size of eta (.21 and .11, respectively), implying that once other factors were controlled for, the influence of siblings on teaching increased. Three further comments about sibling should be made: first, the remarkable low percentage of students who were middle children with working siblings, who entered teaching; second, the fact that although only children were easily the largest category of students attending GHS, this does not translate into a higher than average entry into teaching (it must be noted, however, that the proportion of only children was so large that they in fact strongly influenced the value of the grand mean itself); and third, the category with the highest of students entering teaching were young children.

The third and final dependent variable subjected to multivariate analysis was GPA. The results are reported in Table 45. The model employed the four most interesting family background and student variables--class, heads nativity, siblings, and age at entry--and cohort as factors, although none of the family background or student variables had proven to be related in a statistically significant fashion in bivariate analysis. In principle the absence of a statistically significant relationship in a bivariate analysis does not necessarily mean the the same result will be obtained with a multivariate analysis, and this indeed proved to be the case here, at least for one variable, although given the extremely high number of missing cases, little confidence can be placed in the results. Three of the five factors--class, head's birthplace, and age of entry--were not related

Table 46

MCA for Grades, 1850-1870

Grand Mean = 2.58

Factors	N	Unadjusted Means	Eta	Adjusted Means	Beta	Level of Significance
Class						
Proprietary	38	2.60		2.63		
Middle	15	2.56		2.54		
Skilled Working	24	2.50		2.54		
Unskilled Working	1	2.24		2.35		
Other	9	2.59		2.56		
			.19		.15	n.s.
Head's Birthplace						
USA	57	2.55		2.57		
Ireland	16	2.69		2.68		
Germany	2	2.38		2.33		
England and Scotland	12	2.52		2.55		
			.21		.17	n.s.
Cohort						
1850	45	2.57		2.56		
1860	33	2.44		2.45		
1870	9	3.14		3.17		
			.58		.60	.0001
Siblings						
Youngest; Dependent sibling	14	2.41		2.45		
Middle; Working sibling	3	2.40		2.37		
Middle; Dependent sibling	38	2.62		2.69		
Oldest	28	2.63		2.51		
Only	4	2.66		2.57		
			.28		.30	.05

Table 46--Continued

Factors	N	Unadjusted Means	Eta	Adjusted Means	Beta	Level of Significance
		Age of Entry				
Less than 14.8	28	2.53		2.53		
14.9-15.9	39	2.55		2.57		
16.0-16.9	14	2.66		2.70		
17.0 plus	6	2.83		2.56		
			.72		.16	n.s.

R^2 = .458

R^2(adj) = .325

R^2(adj) without cohort = .067

% of R^2 explained by cohort alone = 79.3%

n = 87 Missing Cases = 382 (81.4%)

in a statistically significant fashion to grades, even after controlling for the influence of other factors in the model. One of the two variables that satisfied a liberal test of significance, siblings, can hardly be taken seriously, given the high percentage of missing cases and the fact that in the bivariate analysis the relationship between siblings and grade was not statistically significant.

The second variable that was found to be statistically significant, cohort, can be taken more seriously. In the MCA, cohort was characterized by a very strong eta and beta, and accounted for 80% of the explained variance in GPA. The difference between the unadjusted and the adjusted means was slight (and, moreover, very close to the means reported in Table 31), attesting to the considerable independence of cohort from other factors in the model.

IV. CONCLUSIONS

Overall, six major conclusions of the preceeding analysis stand out.

First, the overwhelming domination of enrollment at the school by the daughters of proprietors and their growing overrepresentation at the school over time. Between 1850 and 1880 they accounted for 45.67% of the enrollment; in one year, 1870, they accounted for more than half of the students at the school. But not only were the daughters of proprietors relatively more numerous than students from any other class--they were also highly overrepresented. Indeed, in each of the cohort years the level of overrepresentation increased over the level of the previous cohort year, rising from an index of 2.40 in 1850 to

3.31 in 1880. Although a much smaller fraction of the student population (13.46% in 1850, 14.56% in 1880), students from the middle class were also heavily overrepresented: 2.34 times in 1850, and 1.74 times in 1880. Students from the skilled and unskilled working classes, on the other hand, were both underrepresented; and in the case of the daughters of unskilled workers, extremely underrepresented, although at declining rate over time. Moreover, while the percentage of students at the school from the unskilled working class increased between 1850 and 1880 (from 0.96% to 6.96%), the percentage of students at the school from the skilled working class declined between 1850 and 1880 (from 27.88% to 21.52%). Between 1850 and 1880 then, GHS was very definitely a school whose student body was easily dominated by the daughters of the business and middle classes.

The situation after 1880 is much less clear. In an earlier working paper enrollments and achievement at GHS between 1901 and 1922 were anlayzed. This data set was not linked to the census; heads of household were, however, linked to city directories by the number of cases that could not be linked was very high (for the 1901-1910 cohort, some 42.79%). Given that listings in city directories are known to undercount individuals at the lower end of the class structure, it is reasonable to assume that the proportion of students from skilled and unskilled working class families was undercounted by an unknown ratio. However, as I pointed out in an appendix to that working paper, there are several reasons that provide some grounds for placing configence in the enrollment analysis of the 1901-1922 cohort. Moreover, if we assume, for the sake of the argument, that the linking procedure for the 1901-1910 and 1911-1922 cohorts was free of excessive bias, then it is possible to directly compare the distributions of students by class across all cohorts from 1850 through 1911-1922 by using the distributions net of "missing and other." Such comparisons are not comparisons or measures of the actual class distribution of enrollments at the school across time, but they do provide a way of indexing changes in the class distribution of students across time.

Tables 47 and 48 report the class distributions of enrollment patterns at GHS and Philadelphia males 16 and over in the labor force for 1901-1910 and 1911-1922, respectively. Table compares the class distribution of students for the period 1850-1922, while Table 49 reports the values by class and cohort of the index of representativeness and Tan. In all tables masters are included in the skilled worker category, and the residual class ("others") are excluded from the computations. Between 1850 and the 1911-1922 cohort, several important changes took place in enrollment patterns at GHS.

Perhaps the most significant of these was the sharp decline in the percentage of students at the school from the proprietary class (from 50.7% in 1800 to 22.75% for the 1901-1910 cohort) although the proportion increased slightly to 22.75% for the 1911-1922 cohort. The result was a slashing of the index of representativeness from 3.31 in 1880 to 1.80 for 1091-1910, and a jump to 2.35 for the 1911-1922 cohort.

But two other changes were also dramatic: (1) the proportion of

Table 47

Occupational Distribution, Philadelphia, 1910, and Enrollments, GHS, 1901-11

	GHS		Philadelphia		Index of Representativeness
	N	%	N	%	
Proprietary	33	37.0	64,469	12.6	1.80
Middle	87	30.0	92,386	18.1	1.65
Skilled Working	108	37.2	138,842	27.2	1.36
Unskilled Working	29	10.0	215,174	42.1	0.23
Total	290	100.0	510,871	100.0	

Missing and other = 298

Tau = 0.16

Masters moved from proprietary class to skilled working class.

Table 48

Occupational Distribution, Philadelphia, 1920, and Enrollments, GHS, 1911-22

	GHS		Philadelphia		Index of Representativeness
	N	%	N	%	
Proprietary	48	26.4	68,123	11.2	2.35
Middle	37	20.3	123,704	20.5	0.99
Skilled Working	66	36.2	177,783	29.5	1.22
Unskilled Working	31	17.1	233,627	38.7	0.44
Total	182	100.0	603,327	100.0	

Missing and other = 200

Tau = 0.09

Masters moved from proprietary class to skilled working class.

Table 49

Class, by Cohort, 1850-1922

	1850	1860	1870	1880	1901-1910	1911-1922
Proprietary	37.0	44.5	53.2	50.7	22.75	26.4
Middle	15.7	12.1	11.2	17.6	30.0	20.3
Skilled Working	46.0	43.2	29.9	26.9	37.2	36.2
Unskilled Working	1.1	2.7	5.6	8.4	10.0	17.1
Total	100.0	100.0	100.0	100.0	100.0	100.0
n	89	74	6	130	290	143
Missing and other	15	15	14	28	298	201

Table 50

Class by Cohort and Index of Representativeness

	1850	1860	1870	1880	1901-1910	1911-1922
Proprietary	2.40	2.64	3.30	3.31	1.80	2.35
Middle	2.34	1.61	1.24	1.74	1.65	0.99
Skilled Working	0.87	0.92	0.68	0.63	1.36	1.22
Unskilled Working	0.04	0.09	0.17	0.33	0.23	0.44
Tau	0.176	0.166	0.203	0.177	0.16	0.09

middle class students grew from 17.6% in 1880 to 30% for the 1901-1910 cohort, before sliding by a third to 20.3% in 1911-1922; and (2) the proportion of students from the skilled working class increased from 26.9% to 37.2%. In the case of the middle class students, their increased presence in the school between 1880 and 1901-1910 was due to their growing relative significance in the city as a whole--from 10.1% in 1880 to 18.1% in 1910--rather than to an increase in the percentage of middle class parents sending their daughters to the school. In the case of skilled working class students, their increased presence in the school was due to the fact that much higher percentages of skilled working class parents enrolled their daughters to the school, although we cannot be sure of this until the 1901-1922 data set is more fully analyzed.

For the semi- and unskilled-working class, the story is a mirror image of the story of the proprietary class. Throughout the 1850-1920 period students from this class were highly underrepresented at the school, although they slowly grew in relative significance as a consequence of two processes--the fact that increasing percentages of semi- and unskilled-working class parents enrolled their daughters in the school, and the fact that the relative size of the semi- and unskilled-working class steadily increased between 1850 and 1910 before dipping slightly by 1920.

In general then, if we can assume the percentage distributions of the 1901-1922 cohort relatively accurate, the structure of enrollments changed between the 1850-1880 and the 1901-1922 cohorts, on the one

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hand, and within both of the two cohorts on the other. The major difference between the two is the replacement of the proprietary class by the skilled working class as the dominant class within the school, although the dominance of the former in the 1901-1922 period was much less extreme than that of the latter in the 1850-1880 period. The major stories of the 1850-1880 cohort are the dominance of the proprietary class and the declining significance of the skilled working class; the major stories of the 1901-1922 cohort are the dominance of the skilled working class and the decline in the significance of the middle class. Given the 20 odd year gap between 1880 and the 1901-1910 cohort, and the uncertainty surrounding the accuracy of the 1901-1922 cohort, it would be unduly hazardous at this point to offer a general interpretation of the pattern of enrollments at GHS between 1850 and 1920.

(2) Second, enrollment patterns at GHS did not alter in a statistically significant fashion between cohorts when examined with most of the major independent variables in the data set--head's nativity, spouses nativity, students nativity, head's and spouses's race, literacy, sex, and ownership of real or personal property. Several student variables however, were statistically related--age at entry, age at leaving, birthorder, and siblings status. Of these the most interesting were the last two. Although the category "only" child did not preclude the existence of other siblings, the very high percentage of "only" children among the students at GHS (overall, almost 39%), and the fact that students with working rather than dependent siblings were much

more likely to attend GHS, underscore the importance of birthorder and family economy in influencing patterns of enrollment at GHS. Moreover, these differences were systematically related to class background, although not to age or head's birthplace. Further analysis of class differences in family economies using the work/consumption indices developed by Michael Katz, would thus seem desirable.

(3) Third, although length of stay is far from an ideal measure of school achievement (grades completed or graduation would have been much more preferable), it was all (along with teaching status) that was available. Variation in length of stay over time were closely related to changes in the length of the program at GHS (of which more subsequently) but not at all to the large array of family background variables in the data set, with one important exception--class--although not systematically to class rank. Length of stay was also related to several student variables--age at entry, teaching status, and grades. When subjected to multivariate analysis the relationship between length of stay and each of the family background and student variables was not undermined. But the character of these relationships was far from simple, particularly in the case of grades. Although length of stay and grades were related, the nature of the relationship was not meritocratic. Even after controlling for cohort and class, the relationship remained stubbornly nonmeritocratic, albeit far more nuanced and complicated. When controlling for teaching status the relationship between length of stay and grades remains nonmeritocratic, but a radical bifurcation in the length of stay by grade level between

those who entered teaching and those who did not, with the former staying at least twice as long as the latter at every grade level. But despite this finding, in general the relationship between length and grades was not meritocratic, and remained so even after controlling for several variables simultaneously in multivariate analysis.

(4) The second measure of school achievement--teaching status--was, like length of stay, far from an ideal measure of school achievement, particularly since it is not at all clear that graduation was a necessary prerequisite of entry into teaching. With no exceptions teaching status was not systematically related to any of the variety of family background and student-related variables in the data set--including class, heads nativity, age at entry, and grades, despite the fact that length of stay and grades were statistically related, albeit in a nonmeritocratic fashion. This is not to say there were no variations of any interest, for there were--for example, students from skilled working class backgrounds entered teaching in much high proportions than students from other classes, and students who entered teaching had slightly higher GPA's than those who did not. What this adds up to is the conclusion that the relationship between teaching and grades was not meritocratic but neither was it ascriptive; it was simply somewhere in-between. It is clear, however, that students from the skilled working class were much more interested in entering teaching than students from other class backgrounds.

(5) Fifth, the last important school achievement variable, grades, was viewed as both an independent and dependent variable. As an

independent variable it was not linked to teaching status but it was linked to length of stay, although not in a meritocratic manner. As a dependent variable it did not appear to be linked to any of the family background or student-related variables except siblings, and there are good reasons for doubling the validity of this relation. Thus, although the relationship between length of stay and teaching status, on the one hand, and grades on the other, was not meritocratic, grades themselves do not appear to be shaped by ascriptive processes.

(6) Sixth, there is considerable circumstantial evidence that changes over time in the social composition of the student body and the percentage of students who entered teaching were linked to changes in the institutional character of the school. Four considerations prompt this conclusion: (i) the considerable increase in the proportion of students at the school from the proprietary class-a class that we might expect to have a strong interest in the academic education of their daughters and rather less interest in teacher training--between 1850 and 1880, the very time when the school grew increasingly academic in orientation; (ii) the fact that the decrease in the proportion of students from the skilled working class--the class most likely to be interested in teacher training--dropped primarily as a consequence of a drop in the percentage of skilled working class parents enrolling their daughters at GHS; (iii) that while it is true that the percentage of students entering teaching dropped considerably between 1850 and 1860, it is quite plausible that the drop occurred not gradually over the course of the decade but suddenly, during the 1859-1860 school year, the year that the school was transformed into an academic high school for girls; (iv) and that while the percentage of students entered

teaching declined among students of all classes, the drop among students from the proprietary and the middle classes was at least twice the size of the drop among students from skilled working class backgrounds.

APPENDIX ONE

Comparison of Linked and Unlinked Files
by Principal School Variables

	Linked	Unlinked	Level of Significance
Class			n.s.
Proprietary	42.55	53.38	
Middle Class	12.16	13.58	
Skilled Working Class	26.44	23.31	
Unskilled Working Class	5.17	2.26	
Other	13.68	7.52	
	100.00	100.00	
Length of Stay			n.s.
1	17.61	23.26	
2	31.25	20.93	
3	45.45	43.02	
4	5.68	12.79	
	100.00	100.00	
Teaching			n.s.
Teaching	45.00	41.88	
Nonteaching	55.00	58.12	
	100.00	100.00	
Grades			n.s.
A	32.32	23.53	
B	29.29	24.51	
C	25.76	34.31	
D	12.63	17.65	
	100.00	100.00	

Working Paper No. 9

Philadelphia High School for Girls, 1901-1922: Attendance and Achievement

David Hogan

I. INTRODUCTION

The analysis of GHS attendance and school achievement after 1900 is based on a 10% unweighted sample of all the entering classes between 1901 and 1922. The sample was drawn from an alphabetically organized school register, and yielded an N of 988 cases. Due to the fact that the size of the school changed over time (see Table 1) , the sampling procedure yielded an uneven distribution by cohort. Thus, for example, some 36.0% of the sample were located in the 1906-1910 cohort, while only 20% of the sample was located in the 1916-1922 cohort. (Table 2)

Analysis of the sample focused upon five main dependent variables: enrollment, length of stay, grades completed, graduation, and grade-point-average (GPA). The school register provided information on four variables related to school performance: grades by course by year, number of absences, number of times tardy and cause of leaving. The register also provided information on date entered and left, age entered, curriculum, and name of previous school. The name and address of the head of the family were listed, but no information on parental occupation or ethnicity or family size was provided. (To obtain information on family head's occupation, heads were linked to the city directory. Unfortunately, this yielded information on only 488 or 49% of the sample.)

The analysis that follows focuses on five major dependent variables: enrollment, length of stay, grades completed,

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graduation, and grade point average. Several potentially interesting variables - age at entry, age at leaving, previous school, and curriculum turned out to be either not useful or unusable. The number of missing cases for age at entry and age at leaving were so great as to make them virtually useless. Still, for comparative reasons, a multivariate analysis was completed on the major dependent variables using the age variables as independent variables. The last variable, previous school, did not prove to be of any interest. Whether a student came from a school that supplied many or few students to GHS was not related in a statistically significant manner to any of the major or minor dependent variables.

Although the data set does not permit measurement of the relative influence of various social and demographic variables upon patterns of school attendance and achievement, it does permit measurement of the effect of occupational background and class upon attendance and achievement. The first major dependent variable, school attendance, is examined using a five category stratification model based upon the occupation of the student's head of family. The model is composed of a business group, a professional group, a lower middle class group, a skilled worker group, and a semi- and unskilled worker group. In the analysis of school achievement, however, a six category class model replaces the five category stratification model. The use of a stratification model is dictated by methodological reasons: in order to compare the occupational backgrounds of students at GHS

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with the occupational structure of the city as a whole, it was necessary to compare head's occupation with published census data on the occupational distribution of the city for males 16 and over. (Such a comparison involves some life cycle distortion since not all males 16 and over were heads but young unmarried males just entering the labor market).

Two differences distinguish the two models. One, the class model differentiates between skilled workers who are employers ("masters") and those who are merely employees; the stratification model presumes no such distinction. In the class model masters are located in the business class; in the stratification model they remain undifferentiated within the skilled worker category. Two, the class model includes a 6th category, "other", as a kind of residual class in which women, those individuals for whom occupational information was unknown or unspecified, and those working in agriculture or fisheries were included.

The six category class model chosen is relatively large as these matters generally go (2,3, or 4 category models are most usual). The model was developed on the basis of two criteria, one derived from Marxist theories of class and the second from Weberian theory of stratification. The first criteria concerns relationship to the means of production i.e., whether the individual was an employer owning the means of production or an employee. But since the market position or situation (in terms of income, prestige, occupation and education) and work experience of individuals varies enormously within as well as between these two

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groups, as well as over time, additional criteria are required, despite the price that has to be paid in terms of analytical simplicity.

Although a variety of market position variables might be selected, the compelling choice, for both theoretical and analytical reasons, is occupation. To so choose is not without its complications, however. In particular, it introduces an empirical complication - the fact that over time not only has the occupational structure (the distribution of jobs by occupation) changed, but that the nature of individual occupations has changed as well: skilled workers over the course of the late 19th century lost control of the labor process and the kind of broad skills they once possessed, a clerkship in 1850 was very often a stepping stone to membership of the old bourgeoisie but, by 1900 it was a low-level white collar occupation with opportunities at best for promotion to white collar supervisor but almost none to membership of the business class. To introduce occupation then into models of class introduces then a variable historical or empirical component into the model. What might constitute a coherent and sensible model at one point of time might not be so at another point in time. Indeed, for a number of historical analyses, it is impossible to employ with confidence a single model over a protracted period of time, although for analytical purposes there might be compelling reasons to do so. For some historical analyses then a trade off between analytical solvency on the one hand and historical accuracy on the other might be a regrettable, but unavoidable, necessity.

The model I have used in this analysis of GHS between 1901 and 1927 is a six category class model that fortunately, given the relatively short time frame, involves few if any sacrifices of this kind. (1) The Business Class - the classical bourgeoisie of manufacturers, masters, shopkeepers, merchants and managers who owned the means of production and who were invariably, but not always, employers of hired labor power. Managers, if they do not own the means of production, at least controlled the means of production and hired labor power. (2) The Professional Class - lawyers, doctors, architects, dentists and engineers, invariably, but not always, self employed. (3) The Lower Middle Class - clerks, salesmen and saleswomen, teachers, government employees, social workers, and white collar supervisors. (4) The Skilled Working Class - shoemakers, spinners, iron workers, machinists, etc. (5) The Semi and Unskilled Working Class - laborers, factory operatives, etc. Class VI: Other- women, agricultural and fisheries, unknown, and unspecified.

A class model of any kind inevitably involves some problematic choices, and this one is no exception. Four in particular perhaps should be noted. The first involves the specification and differentiation of professional from lower middle class. Robert Wiebe's "new middle class" is very close to my Class II above. Yet I have refrained from designating "new middle class," for the reason that not one, but two, "new" middle class groups developed in the late 19th and early 20th century - a

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professional & managerial group, and a cluster of lower middle class occupations (teaching, social work, the mercantile trades, office work etc.) (Indeed, the notion that one can designate a "new" class - of whatever character - in juxtaposition to an "old" class seems ill-considered for an entirely "new" class structure- an entirely "new" ensemble of classes- developed during the late 19th century: a "new" bourgeoisie of corporate owners; at least two "new" middle classes, and at least two "new" working classes - a new "skilled" working class or "labor aristocracy", and a "new" semi or unskilled working class of factory operatives.) Wiebe's account of the "new" middle class, moreover, ignores the rapid growth of low level white collar occupations, and in grouping doctors, lawyers, teachers and social workers together, confounds an ideological phenomenon ("professionalism") with a structural one (occupational titles).

The second problematic choice involved the collapsing of owners of the means of production and managers into the one class - the "Business Class". Some Marxist theoreticians would locate managers in the business class; others would isolate them in a class of their own. For a variety of reasons I have chosen to merge them with the owners of the means of production and call the merger, appropriately, the Business Class. First of all, there are good theoretical reasons for doing so (see Wright); and second, their social outlook, behavior and strategies are quite similar to the classical bourgeoisie.

The third problematic choice concerns government employees (policemen, firemen, army personnel, "inspectors," "public officials", etc.). I have chosen to locate them in the lower middle class, although good theoretical arguments can be adduced to locate them in a separate class of their own. Yet the disparate nature of the group (enlisted men and officers, "inspectors" and firemen, etc.) partly neutralizes such arguments, and given their small number (N=12), analytically it seemed sensible to group them with the lower middle class.

Finally, women whose occupational title was designed as housewife or domestic were both grouped into the residual class, although I am conscious of the theoretical debate concerning the special status of unpaid housework. Given the small number of women heads, however, it seemed sensible to group the various kinds of women's work together and to merge them with other groups whose class character was ambiguous, unknown, or unspecified.

II. ENROLLMENTS AND FAMILY BACKGROUND

The data in Table 3 report the distribution of enrollment by occupational group, with masters included in the skilled worker category, for the period between 1901 and 1922 as a whole. Girls whose head could be located within the business class constituted over a quarter (26.3%) of all enrollments at GHS. Daughters of professionals accounted for 8.1%, lower middle class 26.3%, and skilled workers 26.9%, and unskilled workers, 12.9%

Table 4 breaks these figures down by occupational category. The single largest group were the daughters of skilled workers (including masters), accounting for over a quarter of all enrollments. The smallest group, apart from the daughters from households headed by women and fisherman/farmers, were those from households headed by factory workers. While the figures in Table 3 and 4 indicate the general character of enrollment patterns at GHS, they do not indicate how representative the pattern was, whether the pattern changed over time, what particular changes within each of the occupational groups occurred, and what effect transferring masters from the skilled worker category to the business groups has upon the distribution.

Table 5 reports the distribution of enrollments by occupational group, aggregated for ten years between 1901 & 1910, and compared to the occupational structure of the city as a whole (in both cases with masters included in the skilled worker group). Although businessmen accounted for 11.4 of the male labor force 16 and over, their daughters constituted 14.8% of the student body at GHS. The index of representativeness on the extreme right of Table 5 is a statistical measure (calculated by dividing the percentage for the school by the percentage for the city) of how representative this representation was - in the case of businessmen, their daughters were overrepresented 1.33 times. The daughters of professionals, however, were even more overrepresented, indeed, exceptionally overrepresented- 6.75 times. The second largest block of students in 1910 were those from white collar and government employee families- 30.0% - but given the relative size of the lower middle class in the population as a whole, they were not nearly as over-represented as were the daughters of professionals. The largest constituency within the school- the daughters of skilled workers- accounted for over a third of the schools enrollment. Students from the homes of semi and unskilled workers, however, accounted for only 10.0% of the schools enrollment, although in the city as a whole semi and unskilled workers constituted 42.1% of the labor force.

On this particular five category stratification model of the social structure then, GHS in 1910 was clearly not a school dominated by the daughters of businessmen, professionals or the semi and unskilled working class, but by the daughters of skilled workers, white collar workers and government employees who together accounted for exactly two-thirds of the enrollment at the school. Later, I will compare this stratification model with a class model of enrollments at GHS. For the moment however, it is necessary to dig a little deeper into the patterns indicated in Table 5 and to compare the pattern for 1910 with that of 1920.

Table 6 breaks down the five occupational groups of Table 5 into 20 discrete occupational categories. Professionals of course stand out as easily the most over-represented group. All three business groups- proprietors of goods, proprietors of services, and masters/manufactures (not including skilled workers designed as masters)- were over-represented, the first two at the same level, the third a little lower. Among the lower middle class groups, the residual white collar group was easily the largest single category, but daughters of white collar supervisors were easily the most over-represented (indeed, second only to professionals for all groups combined). Of the two skilled worker groups, skilled workers per se vastly outnumbered working class supervisors. Of the semi and unskilled groups, daughters from the residual semi-skilled category (mainly transport workers) were most numerous although deeply under-represented (0.02). Students from households headed by factory workers were even more under-represented: in fact, at 0.002, ten times more under-represented.

Between 1910 and 1920 the social structure of enrollment at GHS changed in several important respects. (Table 7). First, the percentage of girls from business homes increased from 14.8% to 18.4%, and the index of representativeness from 1.33 to 1.97. This change occurred despite the fact that the relative size of the business class in the city declined in the interim (from 11.4 to 9.3%). Second, although the relative size of professionals in the city increased, their share of the schools population dropped slightly from 8.1 to 7.6%; their index of representativeness consequently dropped from 6.58 to 4.00. Third, the percentage of students from white collar and government employee families dropped almost by a third from 30.0% to 20.1%, despite the fact that the size of the group in the city increased both absolutely and relatively. Accordingly, their index of representativeness dropped from 1.65 in 1910 to parity in 1920. Fourth, the percentage of daughters from the skilled workers (inflated by the presence of masters) dropped slightly from 37.2 to 35.8% although their relative size in the city increased from 27.2 to 29.5. Finally, the percentage of students from families of semi and unskilled workers increased substantially from 10.0% to 16.8%, although this increase occurred at a time when their relative size in the city dropped from 42.1% to 38.7%. The improvement then in their index of representativeness was due to the increase in their share of the school population and not to a distributional change in the city.

Tables 8 & 9 amplify the changes summarized in Table 7. It is clear for example, that the increase in enrollment among the daughters of businessmen came not from the proprietors of services or manufacturers but from the daughters of proprietors of goods, for whom the percentage of enrollment increased from 10.3 to 13.9%. Students from households headed by professionals continued to be the most overrepresented group. Among the lower middle class groups, the percentage of students from households headed by clerks dropped from 8.5 to 5.8%, the number from households headed by salesmen declined by approximately 60%, and the percentage of students from households headed by white collar supervisors dropped from 1.8 to 1.1%. The percentage from working class supervisor homes increased, but the percentage from skilled workers declined slightly. Among unskilled working class groups, each recorded a modest increase in the percentage of students at the school from their households.

The most general features of the changes between 1910 and 1920 then include a decline in the dominance of the white collar, government employee and skilled worker categories, a growth in the significance of business groups and a growth in the representation from semi and unskilled worker groups. In effect the school became both a little more exclusive and a little more egalitarian.

The analysis upon which these conclusions are based is based in turn upon a stratification model of occupational categorization in which some heads of households, although known to be masters, were included in the skilled worker category in order to make possible comparisons with the occupational structure of the city as a whole. This obviously involves some distortion of two of the five occupational groups, inflating the relative size (and hence the resulting index of representativeness) of skilled workers while deflating the relative significance of the business group. The model distorts, therefore, the overall pattern of relationships between the different occupational groups - a trade off of accuracy for comparability. Locating the masters where they properly belong (in the business class) involves a reverse trade off- comparability for accuracy. The figures in Tables 10,11,12 reflect this trade off, but the results are interesting, and indicative at least, given the previous comparative analysis, of how representative each distribution by class was likely to be. The "likely" index of representativeness was calculated by estimating the percentage change in distribution after moving masters into the business class, multiplying the percentage change by the index of representativeness prior to the relocation, and then adding or subtracting the figure to the index prior to the change.

Three important results in Tables 10 to 12 should be noted. First, the stratification model exaggerates the relative importance of skilled workers and diminishes the importance of businessmen. If the class model is employed instead, the daughters of businessmen account, not for a mere 15.2% of the school population, but for almost a quarter (23.7%), while the percentage of the skilled worker group drops from 37.1 to 28.6%. These changes are reflected in the "likely" index of representativeness: daughters from business homes were overrepresented not 1.33 times but 2.10 times, while daughters from skilled worker homes were not overrepresented 1.36 times but just above parity, at 1.05 times.

Second, the figures in Table 11 indicate a different pattern of change between 1910 and 1920 then suggested by the stratification model in Tables 5 & 7. The relative importance of the business class increases, not from 15.2 to 19.7%, but from 23.7 to 30.2%, while the relative size of the working class drops, not from 37.1 to 35.4, but from 28.6 to 25.0%. The business class grew even more overrepresented than indicated in the stratification model (increasing from 2.10 to 3.23 rather than from 1.33 to 2.11), while the skilled workers in the class model ceased to be overrepresented at all (dropping to 0.85) rather than, as in the stratification model, dropping in their level of over-representativeness from 1.36 to 1.20.

With a class model of occupational categorization then the general features of the character of the enrollment pattern at GHS between 1901 and 1922 look quite different than the patterns generated by a stratification model. In the stratification model easily the largest group in the school in the 1901-10 cohort were the daughters of skilled workers (37.1%) with lower middle second (29.7%) and everybody else way behind. In the class model, the largest group are the daughters of the lower middle class (29.7%), with skilled workers second (28.6%) and businessmen closely behind at 23.7%. By 1920 the pattern is even more different, with the daughters of the business class easily the single largest constituency (30.2%). If the daughters of businessmen are added to daughters of professional families, they account for over 37% of the school's enrollments between 1911 and 1921. At the same time the percentage of lower middle class students dropped dramatically- by almost a third- to 20.9%, while students from skilled working class families accounted for a quarter of the school's enrollment. The percentage of students from the semi and unskilled working class increased from 9.6 to 16.8%, but even at that level, the semi and unskilled working class, as noted earlier, were considerably under-represented given their relative significance in the city as a whole.

One important feature of the changes between 1901 and 1922 should be noted. First, the growth of the relative importance of the business class over time and the decline in the relative significance of the lower middle class were not the result of changes in the relative importance of the two classes in the city as a whole. In fact, in both cases the index of representativeness moved in the opposite direction from changes in the relative position of the two classes: the percentage of businessmen declined, while the relative size of the lower middle class increased. Moreover, the expansion of the representation of the business class at the expense of the lower middle class was not due to the fact that students from the business class squeezed students from the lower middle class out of the school; rather the changes took place at a time when the size of the school almost doubled (see Table 1). Furthermore, daughters of unskilled working class families were able to improve their relative position at GHS during this period. For whatever reason- whether because they found the increased academic content not to their liking, or they found the other high schools in the city offering commercial courses more attractive - the lower middle class increasingly desisted from sending their daughters to GHS. The overall pattern of change then between 1910 and 1920 confirms the impression, that during the first two decades of the 20th century, GHS at one and the same time grew, both more exclusive (in the sense of the over-representation of daughters from the business and professional classes) and less inegalitarian (defined in terms of the proportion of students from working class families attending the school).

Yet if the character of the pattern of changes in enrollments at GHS between 1901 and 1922 is fairly clear, the reasons for the changes can only be guessed at. It seems highly probable that the changing social composition of the student body was intimately connected in systematic ways to the growth of the demand for female clerical labor, to the expansion of secondary education for girls and particularly commercial education, to the fact that from 1893 GHS had self consciously sought to become an academic high school preparing girls primarily for college and university, to class differences in the capacity to bear the opportunity costs of protracted secondary education, to class differences in the quality of primary and grammar school education, and finally, to intricate processes of class formation. It seems possible for example, that for the business and professional classes, GHS was a much more attractive as a selective academic preparatory high school than it was as a training center for normal students. At the same time the decline in the proportion of students from the lower middle class could well reflect greater opportunities for employment of women in commerce and the availability of commercial education in other high schools in the city. The students from the lower middle class on down who attended GHS in all probability were the very able, ambitious or academically inclined students whose families could afford and wished to send their daughters to a high school strongly associated with college preparation.

It is perhaps helpful in this light to compare changes in the social composition of enrollment at GHS and at CHS. To do so involves some slight modification of the stratification model employed for the analysis of GHS to make the categories directly comparable to those used by David Labaree. The modifications involve collapsing the business and professional classes together into the "old middle class", and renaming the lower middle class the new middle class. With these changes the two models are directly comparable.

In 1910 CHS was more exclusive than GHS and remained so in 1920, if exclusivity is measured by proportion of the old middle class enrolled. Moreover CHS in 1910 and again in 1920 could count fewer students proportionately from the semi and unskilled working class than GHS. In other words CHS was both more exclusive and less egalitarian than GHS in both years. But in the decade in-between, the social composition of the two schools changed in quite different - almost opposite - directions. First of all, while the proportion of middle class students at CHS declined considerably between 1910 and 1920, at GHS it grew (Table 5). And second, the proportion of students from the new middle class declined in both schools, the decline was far greater at GHS. (The percentage of students from the semi and unskilled working class grew by roughly comparable amounts with GHS enrolling higher proportions of children from this class than CHS in both years.) In effect, CHS grew less exclusive and more egalitarian between 1910 and 1920, while GHS grew more exclusive and more egalitarian.

These trends are also reflected in the figures in Table 14 that index the relative population shares of each class for 1910 and 1920 for both schools. The index of representativeness for the old middle class at CHS fell from 3.4 to 2.9 between 1910 and 1920, while it grew from 2.7 to 3.3 at GHS. The population share of the new middle class declined in both schools, but declined more at GHS than at CHS. The index for the skilled working class fell at GHS and grew at CHS. While the index for the unskilled working class grew at both schools, it grew by 3 points at CHS and only by 2 points at GHS. The Tau statistic (a PRE measure of the relationship between nominal level dependent and independent variables) summarizes these changes: in 1910 and 1920 class had a stronger effect on enrollment at CHS then at GHS, but between 1910 and 1920 Tau dropped by 10 percentage points at CHS but only by 4 percentage points at GHS. (The decline of Tau at GHS between 1910 and 1920 does not contradict the earlier conclusion GHS grew more exclusive on the years between 1910 and 1920, and for two reasons. First of all much of the decline in Tau at GHS was due to to the decline in the percentage of students from the new middle class, to the point where by 1920 the index of representativeness for the new middle class was at parity level. And second, while the proportion of daughters from the old middle class increased, so too the proportion of students from the semi and unskilled working class. In effect, while GHS grew more exclusive between 1910 and 1920, it grew even more egalitarian.)

III. CURRICULUM

The origins of the post 1900 curriculum date from 1893, the year that a separate and autonomous GHS was formally instituted independent of the Normal School. The curriculum at the new school involved a tripartite course of study: "a General Course covering a period of three years with an additional post graduate year (elective), a classical course of four years, and a Business course of three years" (Clarke, 90). The classical course provided for the study of English, Latin & French throughout the entire four years, while a third language, German, was added in the 3rd and 4th years. It was essentially a college preparatory course to prepare girls for entrance into the top colleges of the country: Bryn Mawr, Wellesley, Vasser, Cornell, Penn, Barnard, Smith, Mt. Holyoke.

The General course was specifically designed to prepare students for the Normal School. Only one language in the General Course was required; the emphasis was placed upon English and the sciences. The really important innovation of the new course in study in 1893 was the Business or Commercial Course, added to satisfy "the friends of practical education." The course concentrated upon what one might expect: commercial arithmetic, penmanship, business forms, bookkeeping, commercial geography, stenography & typewriting.

Assessing the significance of the introduction of the new course of studies at GHS, the principal of the school wrote:

> Great and radical changes had been made in its curriculum; in fact, a new departure in the direction of higher education for women...(I)t will surely add much to the practical value of higher education to girls, and greatly aid those who graduate here in being self dependent and useful as well as ornamental in society...By the changes recently made in the course of study, it is placed in the very responsible position for competing with other schools in the preparation of pupils both for college and business, and at the same time to furnish the new Normal School with such material from our graduates as will guarantee to all interested the best teaching ability in our public schools...(PBE, AR, 1893, 84-86).

In the succeeding years the number of students in the commercial course grew rapidly. By 1899 some 1041 students were enrolled in the course, creating severe problems of accomodation. The principal, Dr. Wright, never sympathetic to the commercial course in the first place, proposed the establishment of "and out and out commercial high school for girls" separate from GHS. The following year, the Commercial High School for Girls was established and 1091 students enrolled in the Commercial Course at GHS transferred to the new school. (Clark 104-106). So ended the first and major experiment with commercial education at GHS.

With the termination of the commercial course, students at GHS could choose from one of three courses: the classical, the general, and the Latin-Scientific, instituted in 1898. A student could enter the Latin-Scientific upon completion of the first two years of either the Classical or the General; it was intended to prepare students for college and university. No major change in the course of study took place until 1909 when, in response to the "great desire of parents that their daughters may enjoy opportunities of higher education", the level of difficulty of the Classical & Latin-Scientific courses was reduced. Two years later the number of students enrolled in college preparatory courses reached 900, fully one third of the entire enrollment. (Clarke 108-110).

While this arrangement was particularly pleasing to the principal of the school, to the friends of practical education it was unacceptable, despite the fact that the Commercial High School for girls had been expanded and renamed the William Penn High School. Their reasoning, it seems, had less to do with political or ideological issues of elitism or egalitarianism, than with satisfying the "demand" of the "community" for more girls with practical training.

A report of the Committee on High School and Commercial High School for girls in 1912 for instance reported "unmistakable evidence of a strong and insistent demand on the part of the community for a broadening of the scope of the school "in order better to minister to the varied needs of diverse interests, capacities and ambitions, and to furnish for this great industrial community a more adequate supply of young people properly trained for the complex conditions of modern industrial, commercial and social life." The committee concluded "that the curriculum of the school as at present constituted is too narrow for it to discharge its proper functions to the community from which it derives its support." (Clarke 110-111).

Despite intense pressure, the administration and alumni of GHS were able to fight off the introduction of commercial education for another 4 years. In September 1916 a commercial course was introduced, but it survived less than 2 years, for in May 1918 the students enrolled in the course were transferred to William Penn High School. (Clarke 125-126). From that time on through the 1920's GHS remained a selective college preparatory school for girls.

Table 15 reports the percentage distribution of students within the various curricula by cohort. The school register at GHS included a variable specifying "course of study". Unfortunately, when a frequency distribution of the responses was examined, it was apparent that the responses included individual subjects and general courses of study. I decided to allocate students into the Academic curricula if they were listed as "Latin" and into the General curricula if they were designated by some other course or course of study, unless of course, they were designated as "commercial".

The growth in the significance of the Academic curriculum over time in Table 15 is particularly notable. As reported in Table 16, a statistically significant relationship did not hold between curriculum and class background for the period as a whole. Over two thirds from each class were enrolled in the general curriculum. Students from professional households enrolled in the Academic curriculum at a higher rate (31.43%) than students from other classes. Only students from two classes - those from the professional class and those from the residual class - were overrepresented in the Academic curriculum, although students from the business class were only slightly under represented (Table 17). Students from the professional class were, relatively speaking, highly overrepresented.

Table 19 examines the proportion of students from each class who enrolled in the various curricula for two cohorts: 1901-1910, 1911-1922. For students from the professional class less than a 50% increase in the proportion of students of that class enrolled in the Academic curriculum took place; for each of the remaining classes the proportion doubled or tripled, and in one case - that of the unskilled working class - increased almost five fold. As a consequence of these changes, the degree of over-representativeness of students from the professional class dropped considerably, while the proportion of students from the unskilled working class changed from chronically underrepresented to slightly overrepresented overall, as measured by the drop in Tau, a general levelling of the class distribution occurred.

Table 21 summarizes the relationship between curriculum and major nominal level variables by reporting the means of each variable by curriculum. The pattern of the results is both interesting and suggestive. For the first three variables, students in the Academic curriculum stayed longer, completed more grades, and graduated at a higher level than students in the general curriculum. For the next 4 variables - overall GPA, GPA in the first grade, GPA in the last year attended, and the difference in GPA between the 1st and the last year - students in the Academic curriculum again outperformed students in the General and commercial curriculum. On the next three variables however - mean absences per year, mean times tardy per year, and the two combined (Tab) - students in the General curriculum were absent less frequently and recorded a lower Tab mean score than those in the Academic curriculum (students in the Commercial curriculum were absent at a level far higher than those in either of the other two curricula). Only with respect to tardiness did students in the Academic curriculum do better than students in the General curriculum. With regard to the last two variables - mean age on entry and mean age on leaving - students in the Academic curriculum started GHS slightly younger than those in the General curriculum (and considerably younger than those in the Commercial curriculum), and left school a little older.

The data in Table 21 thus present a consistent picture: students in the Academic curriculum stayed longer, completed more grades, achieved higher GPA's, graduated at a higher level, and entered younger and left older than students in the other two curricula. Only with respect to absences and Tab do the results seem at all incongruous, for one would normally expect students who did so well academically to also be the most scrupulous in attending school and in attending school on time.

One further point about curriculum should be made. The fact that the spread between length and grades completed was greater for students in the Academic as opposed to the General curriculum indicates that students in the General Curriculum repeated grades less frequently than those in the Academic curriculum. This lends support to the contemporary belief that the reputation of the Academic curriculum for intellectual rigor was well deserved.

IV. CLASS AND SCHOOL PERFORMANCE

1. Class and School Achievement: A Preliminary Analysis

The remainder of this working paper shifts attention away from the relationship between class and enrollment at GHS toward the relationship between class and various measures of school achievement or performance: length of stay, grades completed, graduation, and GPA. In the analysis of each of these dependent variables, the 6 category class model is employed.

Table 22 reports the means of each of the major nominal level variables by class (with masters included in the business class). With the exception of the professional class, only small differences separate the classes in terms of years attended and grades completed; students from professional homes stayed longer and completed more grades than students from any other class. Daughters of unskilled heads completed fewer grades than any other class, although in terms of length of stay, they were second only to professionals. The daughters of both professionals and skilled workers graduated at a rate of 46%, followed in turn by daughters of businessmen (41.0%) lower middle class (38.0%) and unskilled workers (39%).

Each of the three measures of attendance suggests that while class background influenced school achievement, the influence is only obvious at the extremes with no clear or consistent class ranking in the middle ranges. The two obvious standouts are the daughters of professionals who performed best or at least equally well as any other group, and the daughters of unskilled workers who performed least well on the two important variables, grades completed and graduation. When we turn to the various measures of GPA, the picture becomes even more confused, both theoretically and empirically. Differences in GPA scores, could, in principle, measure at least four phenomena: they could indicate differences in academic ability, differences in grade and grammar school education, differences in aspiration, or differences in the level of commitment to the normative order of the school, or it could measure any possible combination of all four. The fact that students had to pass a rigorous selection process to gain admittance to the school does not eliminate the possible importance of differences in ability and academic preparation, but it probably puts a lower limit or floor on the differences. One measure of GPA, GPA for the first grade completed (not, it must be emphasized, GPA for the first year), could possibly pick up differences in quality of academic preparation, while the GPA for the last grade completed is most likely to capture all four influences.

The pattern of empirical results provides too little consistency and too few clues to make possible firm judgements on these issues, at least at the level of univariate statistics. Students from professional families who did so well on the earlier measures of school performance, while they attained the highest GPA in their first year at school, did not sustain this advantage overall or in their last year. Rather, students from business families gained the highest overall GPA, while the daughters of skilled workers had the highest GPA their last year of schooling. Daughters of unskilled workers fared poorest on all three measures of GPA.

The pattern of grade performance thus presents something of a puzzle: apart from the daughters of the unskilled working class, there appears to be no consistent relationship between the first three measures of school performance and GPA, at least along a class axis. The two most theoretically interesting GPA variables, GPA in first and last years, do not present a pattern of results that suggest obvious explanations. With the sole exception of the unskilled working class, GPA in the last year was lower than for students from all classes; for students from the unskilled working class, GPA not only did not drop between the first and last grade completed, it actually increased (from 2.44 to 2.46). Moreover, the drop in GPA score was the greatest for students from the class that had the highest GPA in the first year - students from the professional class who presumably had entered the school better equipped than other students to cope with the intellectual demands of the school. It is difficult to know what to make of all this: if the pattern for students from the unskilled working class had been similar to the pattern of students from other classes, or if the decrease across classes was fairly uniform, one might have concluded that the slide in GPA scores simply reflected the unrelentingly high academic demands of the school. But neither of these conditions hold, and in their absence it is difficult to know what to make of it.

The next variable - the GPA differential variable or DGPA - is no help either in solving the puzzle. Students from the lower middle class fared least well on this variable, followed by those from the skilled working class (whose LGPA was the highest for all students!). The variable has limited value in any case, since its values are influenced by both GPAI and by LGPA. In other words, it is not a particularly useful measure for comparing scores between classes.

In turning to the next 3 variables - absences, tardiness, and the joint variable, Tab - the results here also defy easy interpretation. All three variables might, at first sight, appear to reflect a variety of influences: differences in health, differences in family economy (daughters being asked to stay home to baby sit younger siblings or an ailing parent), or differences in commitment to the normative order of the school. Unhappily, the pattern of results is not consistent enough to allow for easy interpretation. The pattern of results for the absences variable is fairly straightforward with students from the professional class with the lowest score and those from the unskilled working class the highest. The tardiness variable, however, is not so straightforward: while students from the professional class recorded the lowest number of times tardy, students from the business class - the students whose overall GPA is the highest of any group - were the students with the highest mean score for number of times tardy. They also do the poorest on the joint variable, Tab. On the other hand, students from the skilled working class, who managed to secure the highest GPA in their last year of schooling, were the second highest number of absences and third lowest number of times tardy. In other words, there appears to be little systematic effect between GPA and these three variables or else these three variables are simply not good proxies for commitment to the normative order of the school.

The last two variables - age entered and age left - also throw up surprises. One might expect that students from the working classes principally for reasons associated with the family economy, would enter school at an older age and leave at a younger age while the pattern for middle class and business groups would be the opposite. At GHS, only the second assumption held; while students from the working classes were indeed, on average, the youngest to leave GHS, they were also, surprisingly, the youngest to enter the school.

At first glance then the relationship between class background and the various measures of school achievement does not present consistent or coherent pattern. Class differences exist for almost every variable, but the differences between variables are not consistent, or at least not consistent with any obvious theoretical explanation.

2. Length, Grades Completed and Graduation

The variable "length" measures the number of years a student attended GHS; the variable "grades-completed" measures the number of grades completed irrespective of the number of years attended. The two measures were computed in different ways. "Length" was computed by deducting date of entry from date of leaving, while "grades-completed" was calculated by inference from the GPA variable. I attempted to calculate the number of grades repeated by deducting the number of grades completed from the number of years attended, but the resulting distribution produced a large number of students with more grades completed than years attended, suggesting that many students transferred into GHS in the 2nd, 3rd or even 4th year. Since I could find no independent evidence that transfers took place at such a level, I've deferred detailed analysis of repeaters to a later date.

The analysis that follows focuses almost entirely on grades completed and graduation rather than number of years attended. First, my lack of success in generating a reliable repeat variable made linking length and grades completed problematic. Second, grades completed and graduation rather than length of stay were the most significant institutional measures of achievement.

A brief look at the figures in Table 23 indicate that while real differences characterized students from different classes, the differences were not statistically significant. On average almost 15% of all students left the school during the first year, and a further 20.0% approximately by the end of the second year. Students from working class families left GHS at a higher rate in the first year than other students, and professionals at a lower rate. For the first two years combined, whereas less than 20% of students from professional households left, approximately a third of the students in each of the other classes left. The single largest block of students left the second during the 4th year (up to 50% for students from professional household and as low as 33% for students from the unskilled working class), the year that students would have completed the course of studies at GHS if they had not repeated a grade. The percentage of students that attended the school longer than four years is a rough measure of the percentage of students who repeated grades. Overall, it seems hat about 13% of all students repeated at least one grade.

Table 24 reports grades completed by class. With the exception of students from the professional class, approximately a third of all students from each class dropped out of GHS by the time they had completed one grade of high school. Most of these completed at least one grade. Students from the unskilled working class left at the highest rate (37.1%) while those from the professional class left at the lowest (23.1%). But from first grade, with the exception of the 4th grade, the differences, while real, are not consistent. In general, a further 15.0% of the students left after completing 2nd grade (with the rate varying from 17.74% for the unskilled working class to 8.21% for the skilled working class), while a further 7.29%, on average, left at the end of 3rd grade (ranging from 4.72% for students from the business class and up to 15.38% for students of the professional class).

The percentage of students that completed four grades and graduated (with the latter variable slightly lower than the former for all classes except those from the professional class) varied between classes, but overall not in sufficient strength and consistency to be statistically significant. A higher percentage of students from the skilled working class completed four grades and graduated than students from other classes, followed very closely by students from the professional class. In both cases almost 50% of the students from these two classes graduated. Students from other classes (with the partial exception of students from the residual class) trailed considerably behind: only 40.94% of students from the business class graduated, 38.1% from the lower middle, and 35.48% from the unskilled working class.

A breakdown of grades completed and graduation by occupational group also failed to establish consistent and statistically significant relationships.(Table 25). Once again differences existed - for example, all students from homes of proprietors (services) completed at least one grade, whereas

16.67% of students from households headed by government employees failed to do so. Or again, 62.50% of students with fathers who were white collar supervisors completed 4 grades, while only 17.65% of students with unskilled fathers did so. Yet the differences, while obvious and real, did not reflect systematic differences by occupational group and thus were not statistically significant.

Tables 26 and 27 compare, for occupational groupings and individual occupations, the mean number of years attended, grades completed and graduation rates. Overall, students from the homes of proprietors of services completed more grades than students from any other occupational group, while those from the homes of unskilled workers and agricultural workers completed the fewest. But at the same time students whose fathers were masters or proprietors of goods completed fewer grades than those students whose fathers were working class supervisors or skilled workers. The same absence of consistent and systematic behavior is also evident at the level of individual occupations (Table 27). Among the daughters of professionals, for example, 60% of those from households headed by physicians and 70% from those headed by engineers graduated, but for the remaining professional occupations, only 41% graduated. Within the business class, students from families whose head was a proprietor of services graduated at a much higher rate than those whose head was a proprietor of goods. Among lower white collar families, 60% of students from families headed by bookkeepers graduated, 51% from families headed by clerks, and only 21% among the daughters of salesmen. Among skilled working class families, daughters of foremen graduated at the highest rate, but none of the other skilled working class occupations enumerated in Table 27 fared poorly. The same cannot be said, however, of the two unskilled working class occupational categories included in Table 27: laborer and painter. Students from the former graduated at a rate of only 24%, while an even lower proportion, 14%, of the latter graduated.

The conclusion to be drawn from this analysis is plain: the relationship between class and occupational grouping, on the one hand, and length, grades completed and graduation are not statistically significant. Although differences in each of the three measures of school performance do exist, they do not constitute a consistent pattern based on class or occupational rank. Rather, each class created its own distinctive trajectory that, while not randomly related to the trajectory of students from other classes, was not systematically related to class rank.

But if grades completed and graduation were not so related to the class rank background of students, they were both, nonetheless, systematically related to at least two other variables: curriculum and GPA As the figures in Table 28 make clear, both grades completed and graduation were related in a statistically significant fashion to curriculum. A closer look, however, reveals that the relationship is a result of the markedly different pattern for students in the commercial curriculum; for students in the academic and general curriculum, the pattern is quite similar.

The figures in Table 29, on the other hand, are far more intriguing. First, the relationship between GPA and the number of grades completed is distinctly linear: A students on average completed 3.49 grades, B students 3.17, and so on down the line to 0.35 grades for those with a D grade. Moreover, although the mean GPA for those students who left G.H.S. after completing one grade and those who left completing two grades were identical, thereafter the mean GPA went up with each grade completed. Second, only 13.21% of those with an A GPA dropped out at the end of the first grade completed, while 75.47% of those with A's completed 4 grades and 71.7% graduated. On the other hand, only 1.06 of those with a D completed 4 grades, while 77.60% dropped out before completing the first grade. In other words, both the percentage of those graduating and the number of grades completed were related in a linear fashion to GPA Third, it is apparent from Table 29 that students at G.H.S. needed at least to sustain a B- average in order to have at least a 50% chance of completing 4 grades or graduating - students with a C+ or lower had significantly lower chances of completing 4 grades or graduating.

So it appears then that while neither grades completed and graduation are systematically and significantly related to class, they are so related to curriculum and GPA This suggests that a conclusion arrived at by David Labaree in his study of C.H.S. is also applicable to G.H.S.: namely, that while class was an important influence on school enrollment, it had little effect on the school achievement of those in the school. Rather, what determined the number of grades completed and graduation rate was

GPA and curriculum choice.

Grades completed and graduation were also related in a statistically significant fashion to a variable that might possibly be interpreted as a proxy for conduct - or as a Parsonian would say, commitment to the normative order of the school - absences (Table 30). A second such variable, tardiness, was not systematically linked in a statistically way to either grades completed or graduation. The third such variable, the joint variable Tab, was related in a statistically significant way to graduation but not to grades completed.

To know that these variables - curriculum, GPA, and absences - were related in a statistically significant manner does not tell us, however, how strong the relationship was or whether the relationship was a function of its relationship to an intermediate variable that was also related to grades completed or graduation. To answer these questions requires multivariate statistics. The multivariate technique I have used is multiple classification analysis (MCA). MCA combines two procedures - the analysis of variance and multiple regression with dummy variables - to estimate the effects of each level of up to five categorical independent variables (called factors) and up to five interval level independent variables (called covariates) upon a continuous (or metric) dependent variable. The procedure allows the researcher, in estimating the effect of each level of a categorical variable upon the dependent variable, to control for the influence of the additional factors and the covariates (if any).

MCA has several advantages over ordinary multiple regression procedures. First, variables that are of interest to historians are very often categorical (race, sex, class, occupation) and not interval level necessary for multiple regression. Second, where ordinary multiple regression does not allow for the simultaneous use of highly correlated variables (i.e. where multicollinearity holds) MCA does not preclude the use of such variables so long as their correlation is not high or they do not produce in an interactive effect in the manner in which they influence a dependent variable. (Because of the need to avoid interactive effects, MCA is limited to the analysis of main effects only; if two independent variables interact in a particular model, they need to be combined into a joint variable or run separately in alternative models). Third, MCA generates, in addition to an estimate of R squared or explained variance produced by multiple regression procedures, a statistic not produced by multiple regression called beta. A beta in MCA is analogous but not identical to a partial standardized regression coefficient: it measures the relative importance of each factor within a mode rather than the proportion of explained variance. Because independent variables are often correlated, the sum of the squared betas will usually approximate but not equal the value of R squared.

The results of the MCAs are presented in a standard format. Each model presents the grand mean of the dependent variable; the mean for each level of each factor before and after adjustments for all other factors; eta, a measure of association similar to

Pearson's correlation coefficient (r) when the dependent variable is interval and independent variable is categorical (it is also used as measure of association for non-linear relationships between two interval level variables); the beta for each factor (i.e. after adjustment); the level of statistical significance for each factor; and R squared or percentage of explained variance. Since I did not use covariates in the analysis, the MCA models I employed did not produce unstandardized or raw regression coefficients.

Table 31 presents the results of the MCA analysis of grades completed. First of all it is apparent that class has only the most miniscule of effects upon grades completed. The beta for class was a mere .04 and it failed to pass even the most generous test of significance. Yet there are several points of interest within the class variable. As might be expected from the earlier analysis, students from professional families completed more grades than students from other class backgrounds, even after adjustment for the influence of other factors. The big surprise, however, is the exceptionally strong showing by the daughters of unskilled workers- after controlling for the influence of other factors, students from the unskilled working class did particularly well in this model.

But if class was simply unimportant in the model, GPA was of considerable significance. Both before and after adjustment for other factors, there was a strong, statistically significant and linear relationship between GPA and grades completed. Moreover, since the value of beta was only slightly less than the value of eta, we can conclude that the influence of GPA on grades completed was relatively uncontaminated by the influence of other variables: its strength was relatively undiminished after controlling for the other factors in the model. That is, GPA was not important because it worked in tandem with say class or the number of absences: an A student, for example, who graduated did so primarily because she was an A student and not because she was an A student from a professional family. The overall importance of GPA in the model can be determined by comparing the amount of variance explained with GPA in the model (.350) and without GPA (.155). In effect, GPA alone accounted for over 55% of the explained variance.

One final point concerning the effect of GPA on the number of grades completed: students who attained at least a C+ GPA completed a number of grades equal to or better than the mean; below a C+, the number of grades completed drops precipitously. At the other end of the scale, students with a GPA of A, after adjusting for the influence of other factors, completed, on average, 3.30 grades compared to the overall mean of 2.61 grades completed.

In the bivariate analysis of grades completed, curriculum was related in a statistically significant fashion to grades completed. With a multivariate analysis, the relationship disappears. Indeed, when the model is run without curriculum, the R squared drops by only .03%. For the final variable that was related in a statistically significant manner to grades completed, absences, the relationship remains statistically significant in the multivariate analysis. Its significance, however, was in no way comparable to that of GPA; its beta was a mere .17. Moreover, since the value of its beta was less than half of the value of its eta, absence was obviously a variable strongly influenced by the other factors (MCA doesn't permit us to say which ones) whereas the drop from eta to beta for GPA was relatively small.

In the preliminary analysis of school performance in Section 4, I noted the inconsistent and inconclusive differences by class in the means of two other GPA measures in their relationship to the number of grades completed: GPA for the first grade completed and GPA for the last grade completed. It was thus of some interest to assess if GPAI or LGPA made any difference to the results of the model if substituted for GPA.

When GPAI was substituted for GPA, it still overwhelmed the influence of other variables, although the value of its beta (.39) was lower than that for GPA (.51), and the value R squared (adj) dropped from .350 with the GPA model to .244 while the GPAI was easily the best predictor in its model of the number of grades completed, it was not as good a predictor as GPA. Still, its considerable power reflects the fact that even by the end of the first grade completed, grade point average was by far the best predictor of how many grades a student would complete at school, easily overshadowing the predictive power of other factors.

When GPA for last grade completed was substituted for overall GPA, the results of the MCA again confirmed the preeminence of GPA as the best predictor of grades completed. Class, again was able to generate a low beta of .08, while the beta for LGPA was 0.44.

The R squared (adj) of the model (.254) was slightly higher than the R squared for the GPAI model (.244) and substantially lower than for the overall GPA (.350); similarly, the highest beta was obtained by GPA (0.51) followed by LGPA (0.44) and then GPAI (0.39). GPA then not only was the best overall predictor of variations in grades completed, but the best predictor by the end of first grade, and a predictor that grew stronger as students moved through the school.

The results of the MCA for graduation are very similar to the results of the MCA for grades completed. Once again the striking feature of the model is the overwhelming importance of GPA in determining the level of graduation, and the lack of significance of class. Overall, the beta for GPA was .40, some 10 points less than the beta for GPA in the MCA model for grades completed, but still very respectable. The beta for class was .03. After adjusting for the influence of other factors, fully 65% of those with a GPA of A graduated, 62% of those with a B+, and 59% of those with a B-. Below this point, however, the percentage of students who graduated drops off dramatically. Only 35% of those with a C+ graduated, 9% of those with a C-, and 8% of those with a D. Class on the other hand, exerted almost no influence on the level of graduation. After adjusting for the influence of other variables, 47% of the students from professional homes graduated, but so too did students from the unskilled working class. Only 6 points separated the minimum and maximum values, compared to 57 percentage points with the GPA variable.

The results then of the multivariate analysis of grades completed and graduation are identical: in both, GPA, rather than class, is not only a very powerful predictor, but almost the sole predictor of variations in the number of grades completed and graduation. This is reflected in the beta scores, and in the proportion of explained variance due to GPA alone - 55.7% in the grades completed model, and 57.2% in the graduation model. The overall power of the graduation model, as reflected in the value of R squared, is less than the grades completed model, but the relative importance of GPA, although lower in the graduation model, is of comparable magnitude.

The significance of the two remaining factors - curriculum and absences - in explaining differences in level of graduation is very similar to their role in explaining grades completed. The beta's for curriculum in the two models are almost identical, and the same is true for absences. Moreover, in both models for both variables the value of eta is significantly greater than the value of beta, reflecting the fact that, unlike GPA, the influence of both curriculum & absences was strongly mediated by other variables, perhaps GPA. The drop from eta to beta for GPA on the other hand was quite small, a sign that, as in the model for grades completed, that GPA was not only a powerful but also an autonomous variable: it was a variable whose influence was hardly diminished when the influence of other factors was controlled for.

As with the analysis of grades completed, I substituted GPAI and LGPA for GPA to break down the pattern of the influence of GPA on graduation. When GPAI was substituted for GPA, the R squared (adj) dropped from .229 to .222 while the beta for GPAI was 0.38, compared to 0.40 for GPA. The beta's for class and curriculum were low and insignificant, while that for absences was low but significant (beta=0.14). When LGPA was substituted for GPA, the value of R squared (adj) increased to .290, although the pattern and value of the beta's was substantially the same as for GPA. The beta for LGPA was .48, a little higher than the beta for GPA, while the betas for class and curriculum were, as usual, low and insignificant. As with the multivariate analysis of grades completed, the MCA analysis of graduation rates unequivocably establishes the preeminent - almost monopoly - power of GPA or its corollaries to explain variations in rates of graduation. Class and curriculum were simply insignificant, and while absence was significant, it was easily overshadowed by GPA.

In sum: for both measures of school performance or achievement, grades completed and graduation, class was not an important influence on school performance. GPA, however, was, and overwhelmingly so. Moreover, when GPAI and LGPA were substituted for GPA, similar results obtained, indicating that not only was GPA overall by far the best predictor of grades completed and graduation, but that when broken down into two of its important components, its significance remained undiminished, and as in the case of LGPA, even increased. From the time a student entered GHS until the time she left and/or graduated, only one variable had any significant effect on the number of grades completed or whether she graduated or not - GPA Indeed, the importance of GPA increased slightly over the course of the students tenure at the school. Like CHS, GHS was an institution entry into which was guarded by class but exit from regulated by academic merit.

3. Grade-Point-Average (GPA)

Given the significance of GPA as an independent variable in influencing variations in the number of grades completed and the level of graduation, it is of no small interest to turn the tables, as it were, and ask of GPA what influenced variations in it. In particular, given that class played little or no part in influencing variations in the number of grades completed or the level of graduation, did it also play no part in influencing variations in GPA?

As the figures in Table 35 indicate, there appears to have been no significant statistical relationship between class and GPA at GHS. The distribution of grades within and between each class does not vary by statistically significant levels, although some differences did exist. Only 2.38% of students from the lower middle class obtained a GPA of A, whereas 7.09% of students from the business class secured a GPA of A. Yet, on the other hand, 11.02% of students from the business class obtained a GPA of C-, while only 4.76% of the lower middle class did so. The absence of statistically significant differences is also reflected in the absence of systematic GPA differences between classes, occupational group and occupational category (Tables 36 & 37). It is not that there were no differences: the mean GPA of students from professional families (2.55) was appreciably higher than the GPA of students from the unskilled working class (2.58) (Table

36). But at the same time the GPA of students from the homes of skilled workers (2.58) and white collar supervisors (2.76) was higher than that of students from professional homes (2.55) or proprietors of goods (2.56). Students with fathers who were physicians did better than students whose fathers were foremen (2.63 and 2.21 respectively) but students whose fathers were carpenters (2.74) did better than students with physician fathers (Table 37).

We can also look at the relationship between GPA and class from a different perspective - not the distribution of GPA's within and across classes, but the distribution of classes within and across different GPA scores (Table 38). If the distribution of grades is any measure, GHS was hardly a school inflicted with grade inflation: only 5.36% of the students at GHS were able to maintain an A average (3.5 or better). Almost half of the student body obtained a B+ (3.0-3.4 GPA) or a B- (2.5-2.9 GPA) - slightly more than 30% of the students received a B- GPA alone. Almost 50% of the students received a letter grade of C+ or lower.

Although class and GPA were not related in a statistically significantly fashion, GPA was so related to curriculum and absences. Although only 24.54% of students enrolled in the school were enrolled in the academic curriculum, over 43.0% of all A's were gained by students in the academic curriculum; conversely, while 73.86% of all students enrolled were enrolled in the general curriculum, only 56.2% of all A's gained were gained by students in the General curriculum. (Table 39). On the other hand, if we compare the pattern of grades within each curriculum separately

(Table 40), the pattern for both the Academic & General curriculum looks remarkably similar, and it is only the pattern of grade achievement within the commercial curriculum that enables the overall relationship between grades & curriculum to attain statistical significance. The relationship between grades & absences, however, is stronger. With absences as the dependent variable, the relationship between the number of absences and GPA was distinctly linear: the GPA of those with fewer than an average of 2.4 absences per year was 2.71, for those with between 2.5 and 4.0 absences per year 2.66, and so on down to a GPA of 2.03 for those students with more than 12 absences per year. (Table 49). Furthermore, the relationship between absences and GPA was also strongly linear when examined from the perspective of the average number of absences for each grade level: whereas students with an A grade were only absent, on average, 3.55 times per year, B+ students were absent 4.01 times per year, and so on down the line to 13.88 absences per year for students with a D grade.

To sum up then: GPA seems not to have had a statistically significant relationship with class or occupation, an ambiguous relationship with curriculum, and a statistically significant relationship with absences. Multivariate analysis, however, suggests that although GPA was very strong predictor of grades completed and graduation, none of the variables available for analysis explains variations in GPA. In the MCA model reported in Table 42, class has a statistically significant relationship and a moderate, albeit low, beta (0.13): although the difference in the adjusted means between students from the business class and those from the unskilled working class is not particularly large (2.61 and 2.33 respectively, or the difference between a B- and a C+), it is large enough to contribute to the generation of a statistically significant relationship between GPA & class, the only relation between any measure of school achievement and class that passed even the most liberal definition of statistical significance (.05 level) in multivariate analysis (in the bivariate analysis of GPA and class, the relationship was not statistically significant).

Nothing of significance can also be inferred for the second factor, grades completed, for although characterized by a strong and robust beta (.31), easily the highest in the model, the MCA model actually inverts what is surely the causal direction between the two variables. That is, what the beta in this model reflects is not the effect of grades completed upon GPA, but the strong statistical association between grades completed and GPA as a consequence of the causal effect of GPA upon grades completed. If, therefore, we drop grades completed from the model, the value of R squared (adjusted) (=.137) reflects the true state of affairs, namely, that the model cannot explain even a modest proportion of the variation in GPA. This is not to say that variation in GPA cannot be explained, but it is to say that none of the available variables make any appreciable headway in doing so. Since the beta for curriculum is infinitesimal, the only variable in the model even remotely connected as an independent variable is absences (beta=.27): the fewer the absences, the higher the GPA; the greater the number of absences, the lower the GPA. But given that the model as a whole explained only 13.7% of the variance in GPA, and the number of absences could only account for a fraction of that amount, it has to be concluded that the factors fail to explain even a modest level of the variance in GPA.

What is true of GPA is also true of GPAI and LGPA as well. Neither GPAI nor LGPA were related in a statistically significant fashion to class (Tables 43-44), and in the multivariate models, the same pattern of results - and qualifications - obtained with GPA also occurred with GPAI and LGPA (Tables 45-46).

The clear and unequivocal inference to be drawn from the multivariate analysis of GPA is therefore that none of the available factors explain even a modest amount of the variance in GPA or in corollaries - GPAI and LGPA. This is obvious in the absence of any meaningful strong beta's and in the painfully low values of R squared (adjusted) after grades completed is removed from the model: .137 for GPA, .118 for GPAI, and .108 for LGPA. GPA, then, although easily the most powerful determinant of other measures of school achievement, itself cannot be explained.

4. Absences

Earlier in this paper I noted that the average number of times a student was absent from school a year was related in a statistically significant fashion - and, in most cases, at the .0001 level - to the number of years attended, the number of grades completed, graduation rate, and GPA. Given these findings, it is appropriate to briefly examine the relationship between absences, on the one hand, and class background and GPA on the other.

As with other measures of school performance, class was not associated in a statistically significant fashion to the number of absences. The difference between the mean number of absences of students from the business and skilled working class was only .01%; the spread between the minimum and maximum mean scores was less than 1%. (Table 47). Yet if one examines the relationship between absences and occupational grouping (Table 48) a weak but statistically relationship did exist. Almost 65% of students from proprietor (services) households were absent fewer than 4.0 times per year, while almost 67% of the daughters of unskilled workers were absent at least 4.1 times per year.

Absences were also linked in a statistically significant fashion to GPA: A, B+ and B- students had few absences; C+ students were evenly spread, roughly speaking, across all categories of absences, while C- and D students tended, on average, to have high levels of absenteeism.

5. Cohort Effect

In Part II of this working paper I pointed out that the class composition of GHS changed over time. When class composition (with masters included in the business class and the "other" included in the overall model) was broken down by cohort (1901-1905, 1906-1910, 1911-1915, 1916+) the level of significance was just slightly above the .05 level (.058). When broken down into two cohorts, (1901-1910, 1911-1922), however, the distribution satisfied the .05 level of significance. For example, while daughters of the business class accounted for 13.78% of the student enrollment overall between 1901 & 1922, for the 1901-1910 cohort they accounted for 12.88% but for the 1911-1922 cohort, 15.05%. Students from the lower middle class accounted, overall, for 13.78% of student enrollment, but differed considerably by cohort: 16.48% for the 1901-1910 cohort, but only 9.95% for the 1911-22 cohort. Students from the unskilled working class accounted for 5.49% of the 1901-1910 cohort, but 8.33% of the 1911-1922 cohort.

The overall effect of these changes was to make the school both more exclusive and more egalitarian: more exclusive in that a higher proportion of students in the 1911-1922 cohort came from business households than in the 1901-10 cohort, and more egalitarian in that a higher percentage of students from the unskilled working class attended the school after 1911 than in the 10 years before (Table 50). Granted these changes then in the social composition of the student body, it is of some interest to ascertain whether the internal dynamics of school achievement also changed over time. Did, for example, GPA matter less in the first decade than in the second as a determinant of variations in grades completed or graduation? When cohort is controlled for, does the amount of explained variance increase or decrease?

Because cohort interacted with other factors in the models used to account for variation in school achievement, separate MCA's were run for each cohort for each of the principle dependent variables. The results are rather startling (Table 51). Whereas the value of R squared (adj) for the number of grades completed for the period 1901-1922 overall was .350, for the 1901-1910 cohort it was .281, and for the 1911-1922, .469. With respect to graduation, the value of R squared for the period overall was .229, for the 1901-1910 cohort the value of R squared=.183 and for the 1911-1922 cohort, =.319. For GPA, the value of R squared of the 1901-1922 period overall was .137.

The large increases in the level of explained variance for each of the measures of school achievement between the 1901-1910 and the 1911-1922 cohort points unmistakably to the increased power of each of the models to explain variations in the various measures of school achievement. Yet if the value of the beta's for grades completed and graduation are examined closely, only in the graduation model did the beta for GPA increase - from .40 to .44. For the grades completed model the beta for GPA remained the same, although at a very high level (=.50). On the one hand, the beta's for absences in both the grades completed and graduation models approximately doubled; at the same time, the beta's for class increased for both measures, and the beta's for curriculum in both models increased from zero or near zero to modest values of .15 and .10 for grades completed and graduation respectively.

With respect to grades completed and graduation then, these results suggest that while the models for grades completed and graduation are considerably more powerful after 1910 than before it, the enhanced explanatory power of the models was not due so much to an increase in the importance of GPA in the determination of school achievement, but rather to the increased significance of the other factors in the model - curriculum, class, and particularly number of absences. In the model for grades completed, class even became a significant factor influencing school achievement, although it did not do so in the graduation model. But for both grades completed and graduation, the importance of curriculum and absences became statistically significant.

In effect, the process or dynamics of school achievement at GHS changed appreciably between 1901 and 1922. GPA remained the overwhelming important determinant of school achievement both before and after 1910, but because the relative power of class, curriculum placement and number of absences also grew, its relative significance after 1910 was somewhat less than it was before 1910, although its absolute strength (as measured by the value of beta) in determining variations in graduation also increased. The precise extent of the relative decline is measured by the value of R squared (adj) after deleting GPA from the models for grades completed and graduation.

It can hardly be argued that these changes in the process of school achievement at GHS after 1910 constitute a dramatic change in the character of the process of school achievement. Both before and after 1910 GPA was the overwhelming important factor determining variations in school achievement. Rather, these changes indicate a modest alteration in the process of school achievement and point toward a more complex, multifaceted process involving class, curriculum and absences, as well as GPA. The challenge of course is to explain the transformation, but given the absence within the data on school achievement of any indication of why the change took place, any explanation must of necessity be speculative, and will be deferred to the conclusion.

6. Age Effects

To assess whether the age at which students entered or left GHS had any bearing on their level of school performance, or if it was any way systematically related to class background, the age at which students entered and left GHS was examined. Neither age or entry or age at leaving were related to class in a manner sufficient to satisfy even a liberal test of statistical significance. For both variables, the mean age varied a little by class - for example, daughters of professionals were more than a year older, on average, than the daughters of skilled workers, when they left school - but the differences were not systematically linked to class rank. Age at leaving was not linked in any significant way to GPA or any of its corollaries, but the same was not true of age at entry. In fact a clear linear relationship characterized the two: the younger the student was when she entered GHS, the higher the GPA she achieved. But since this finding does not control for the number of grades completed, not too much should be made of it (Table 52). Finally, age at leaving was linked in a statistically significant manner to grades completed and graduation, although the number of missing cases was extremely high (Table 53). In general then, although the results are suggestive, the number of missing cases was so high as to render the two age-related variables virtually useless.

III. CONCLUSIONS

The preceding analysis points to the following major conclusions:

(1) That enrollment at GHS was moderately influenced by class background, with students from professional and business homes considerably overrepresented and those from the unskilled working class significantly underrepresented;

(2) That the nature of the distortion of enrollment by class changed over time, with children of the business class becoming more overrepresented, the proportion of students from lower middle families dropping dramatically, and the degree of underrepresentation of students from the unskilled working class declining;

(3) That although class influenced who attended GHS, it had no influence on school achievement; rather, for each measure of school achievement - number of years attended, grades completed, and graduation rate - GPA was the overwhelmingly important factor;

(4) That although GPA was the important determinant of school achievement, what determined it in turn was not all apparent, although it is clear that differences in GPA could not be explained by class;

(5) That class was not related in a statistically significant manner to the average number of absences per year, but that absences per year was systematically linked to length, grades completed, graduation and GPA;

(6) That between 1901 and 1922 the dynamics of school

achievement within the school changed appreciably in two ways: (a) the power of the various models to explain school achievement was considerably greater for the period after 1910 than it was before 1910, and (b) while GPA was the predominant factor explaining changes in grades completed and graduation both before and after 1910, it was relatively less significant after 1910 than it was before.

The findings therefore demonstrate a direct link between social structure (conceived in terms of the relative size and distribution of classes in the city) and school enrollment, but equally demonstrate the absence of a direct link between social structure and school achievement (whether measured in terms of grades completed, graduation or grades). I will address each of these issues in turn.

From the data it is apparent that the students at GHS did not reflect a representative cross-section of the city: they were overrepresented at the top end and underrepresented at the lower end of the social structure. Moreover, between 1901 and 1922 the relative significance of students from the business and upper classes increased, while the proportion of the lower middle dropped dramatically and the percentage of students from the unskilled working class increased, although not to anywhere near parity. The absence of data on family size, family economy and nativity, and the lack of opportunity to complete systematic analyses of women's occupations, and the availability of secondary and higher education for females renders impossible any secure judgment about the nature of the relationship between the social structure and enrollment at GHS.

Nevertheless, the temptation to speculate is irresistible. It seems highly likely, for example, that the overrepresentation of students from business, professional and lower middle class families at the opening of the new century reflected the close association throughout the late nineteenth century between secondary education for girls and school teaching. Apart from school teaching there were very few jobs for daughters of respectable families or parents seeking to gain respectability for their daughters. At the same the considerable underrepresentation of students at GHS from semi and unskilled working class families probably reflected the economic pressures on such families to get their daughters out into the labor force earning money, and perhaps their indifference or hostility to more than an elementary education for girls. It's quite possible that such parents did not themselves have high educational aspirations for their daughters or cultivated them in their children. With the coming of the new century, however, opportunities for higher education for women expanded, while the number of clerical and white collar jobs for women grew rapidly. At the same time the continued expansion of schooling in Philadelphia sustained a growing demand for school teachers. The response of parent to these changes varied according to the exigencies of the family economy and their educational and social aspirations. It seems plausible, for example, that the increased proportion of students from business and professional families was a response to (or expressed) the growing demand for higher education for women, while the decline in the proportion of students from the lower middle class perhaps reflects a decline on their part of the desire (or the necessity) to go into teaching and to enter the commercial world instead. Without data on the educational aspirations of the family economy of working class parents it is possible to only speculate on the possible reasons for the increased attendance of their daughters over the course of the period: it might have reflected a change in their educational aspirations, or it might have reflected an improved financial situation making it possible for them to satisfy frustrated educational aspirations. With the data available to us at the moment, we have no way of knowing which reason was significant.

Yet although a number of issues remain unresolved, the general outlines of the relationship between family background and enrollment at GHS are fairly clear. A similar conclusion also emerges from a review of the analysis of the process of school achievement. Thus, although the absence of data on conduct and intelligence does not permit a complete examination of the process of school achievement in the manner undertaken by contemporary sociologists, still the research findings are quite unambiguous: family background (at least as measured by occupation and class) had no statistically significant effect on any measure of school achievement we possessed, grades were the only statistically significant determinant of grades completed and graduation, and grades themselves were not in any measurable statistically significant sense determined by family background. In effect, much as David Labaree discovered for CHS between 1850 and 1920, the process of school achievement at GHS was uncompromisingly meritocratic. Moreover, it was meritocratic in two senses: insofar as the number of grades completed and graduation rate were determined by grades and grades alone, the process of school achievement at GHS represents a "secondary" meritocratic process; insofar as grades themselves were not determined by family background, then the process of school achievement at GHS can be described as meritocratic in a "tertiary" sense. (Since we do not have data on occupational attainment, it is not possible to determine whether the process of status attainment was meritocratic in the "primary" sense of the word.)

These are findings of considerable theoretical interest for they demonstrate that like CHS, GHS was a bourgeois institution that actually did what it was intended to do: be a selective and academically rigorous high school for girls characterized by meritocratic processes of school achievement. At least for the two leading high schools in the city, it cannot be argued that the processes of school achievement were differentiated (or to use a term borrowed from labor market theory, "segmented") by gender. Whether of course they were unique in this characteristic is another question; if they were, then it suggests that important systematic differences (notably by class) divided the selective and academic high schools on the on hand and the comprehensive (although primarily vocational) schools on the other. Research underway on other high schools in the Philadelphia area will enable us to go some way in answering this particular question.

The existence of meritocratic processes of school achievement at GHS raises other question as well: was the process of school achievement at GHS before 1893 (when GHS became an academic high school for girls) meritocratic or not? In what ways are meritocratic processes of school achievement at CHS and GHS linked to the creation of a credentials market in Philadelphia in the late nineteenth century? to changes in the organization of work and opportunity structures? to the development of differentiated educational curricula? to the expansion of secondary education?

Finally, it is necessary to address two further issues: first, whether the absence of a statistically significant relationship between family background and grades can be explained by the character of the student population itself, and second, whether the variable "absences" can be reasonably viewed as a proxy for conduct.

The first question asks whether school enrollment patterns mediated the relationship between family background and school achievement, so that the absence of a statistically significant relationship between family background and the various measures of school achievement was an artifact of the particular class composition of the student body. The short answer to the question is that I have no way of knowing either way, but it is certainly reasonable to assert that not only were the students who attended GHS not representative of the city as a whole, but they might have been unrepresentative in another sense as well in a manner that would account for the absence of a relationship between family background and school achievement. That is, it might be argued that the student body was unrepresentative and selective, in that the students who attended GHS, no matter from what class, were bright, capable, motivated, and sufficiently well-educated to satisfy the demanding standards of the entrance exam. The students from working class backgrounds were probably even more exceptionable and selective. The unrepresentative and selective character of the students ensured, and perhaps even facilitated, a congruence between the cultural orientations of the students and the normative order of the school, in particular its meritocratic process of achievement. The students who attended GHS were, for the most part, more than willing to complete what Paul Willis calls the pedagogical exchange - the exchange of regular attendance, hard work, and obedience for good grades, promotion and graduation. Without a student body of the kind that characterized GHS, it might be argued, a purely meritocratic system of achievement would not have been possible, or at least much less likely.

This is by no means a meretricious argument about meritocratic achievement processes at GHS. It might be true, it might be false, I have no way of knowing; but if the truth be known, I believe it highly likely on extraneous theoretical grounds to be at least partly true. Yet I doubt it is entirely true, given the strength of the association between grades and school achievement, and the fact that not only was family background not statistically related in a significant way with any measure of school achievement, including grades, it was not even remotely close to being so. In a sense then I suppose both arguments are correct, although in the last analysis I doubt this would worry an apologist of meritocracy too much, for he or she could very well explain that the very purpose and functioning of a meritocratic process of status attainment both presumed and welcomed the characteristics identified by the hypothetic critic. After all, the meritocratic argument is not that there is no association between conduct, effort or ability and meritocratic achievement, but only that meritocratic achievement is not arbitrary or ascriptive.

In this context it is appropriate to raise a related issue: it is tempting to speculate that the modest increase in the proportion of working class students between 1911 and 1922 and the slight change in the dynamics of school achievement for the same period (namely, the increased significance of class as a factor in the MCA for grades completed) were linked: that the change in the dynamics of the process of school achievement were due to the changed social composition of the students. Such speculation is folly however: the beta for class only increased from .09 to .14, hardly a large increase, and was still easily overwhelmed by GPA which remained unchanged (beta=.50). Moreover, class was not a significant factor in either of the other two measures of school achievement, graduation and GPA. The process of school achievement might well have been closely associated with the character of the process of school achievement, but these cohort changes do not provide a basis for believing so.

The second point identified early in the conclusion as an issue of some interest concerns the variable "absences" and whether it can reasonably be approached as a possible proxy for conduct and therefore a means of measuring some of the nuances of the pedagogical exchange. If we assume that not all of the differences in school achievement can be explained by differences in ability or "intelligence" (however measured), then it is quite plausible to hypothesize that some part of the difference can be explained by differences between students in commitment to the normative order and goals of the school. In view of the lack of any direct measure of conduct or normative commitment, and in view of its statistically significant association with all four measures of school achievement, the variable "absences" could very well be regarded as the mirror image of achievement and thus as a proxy for normative commitment and willingness to complete the pedagogical exchange. Absences might also, of course, reflect differences in the family economy or patterns of family health and sickness, both of which we know to be systematically linked to class; however, the fact that absences was not linked to class at all (and occupation only weakly) in the GHS data set suggests that absences were not a proxy for family economy or health, although it is possible that absences might be linked to class through an intermediary variable. If we accept "absences" as a proxy for conduct or normative orientation, there, then at least part of the variance in school achievement can be explained by different evaluations of the pedagogical exchange. Since absences were not systematically linked to class, however, it is unlikely that differences in normative orientation were class based.

APPENDIX

Since completing this working paper an initial analysis of the 1850-1880 file for Girls High School has been completed. On comparing the class distributions for the two data sets it is apparent that either major changes took place in the pattern of enrollments between 1880 and 1901-10, or there is considerable linkage bias in the 1901-22 data set. Overall 51.2% of the 1901-22 data set could not be linked to the city directory, whereas the percentages for 1850, 1860, 1870 and 1880 were 14.42%, 3.80%, 11.57%, and 14.56% respectively (Table A1).

Because of the relative size of "other" for the 1901-10 and 1911-22 cohorts, the percentage distributions of the remaining classes are seriously distorted by the residual class. It is therefore more useful to compare the pattern of enrollments for all cohorts between 1850 and 1911-22 net of "others" (see Table A2). But even without the distorting effect of "others", it is clear that either radical changes occurred in the class distribution of students or that considerable linkage bias afflicted the 1901-10 and 1911-22 cohorts. With the exception of the daughters of unskilled workers, quite dramatic changes apparently occurred in the class distribution of the other three classes between 1880 and 1901-10: the percentage of students from the proprietary class (businessmen and professionals) fell by more than half from 50.7% to 22.75%; the percentage of middle class students almost doubled (from 17.6% to 30.0%), and the percentage of skilled working class students increased from 26.9% to 37.2%. For a variety of reasons I'm tempted to conclude that the distribution of the unlinked cases (i.e., those cases included in other) was not systematically biased toward any one class.

First, the most dramatic change between 1880 and 1910 occurred in the enrollment pattern of daughters of proprietors, the class that is probably the least affected by linkage bias. If there were any linkage bias, we would normally expect it to work to the advantage of the proprietary class and not to its disadvantage.

Second, however, the increase in the relative importance of the middle between 1880 and 1901-10 is consistent with linkage bias, except for two considerations: (a) that it is unlikely that what is reasonable for the proprietary class is unreasonable for the middle class, and (b) the fact the sudden jump in the relative size of middle class enrollment between 1880 and 1901-10 occurred at the very same time as the relative importance of the middle class increased in the city as a whole - almost doubling from 10.1% in 1880 to 18.1% in 1910. Indeed, the rate of increase of the middle class in the city was a little higher than the rate of increase of middle class enrollment at GHS; it is for this reason that the index of representativeness for the middle class was 1.74 in 1880 and only 1.65 in 1901-10, despite the size of the growth of middle class enrollment between 1880 and 1901-10. The large increase in middle class enrollment therefore can be explained without recourse to arguments based on linkage bias.

Third, the increase in the percentage of the enrollment accounted for by the skilled working class between 1880 and 1901-10 is also inconsistent - at least to a point - with a linkage bias interpretation, since if linkage bias did exist, more than likely it would have been to the disadvantage of the skilled working class. Of course, it is possible that the figures we do have underestimate the growth of the enrollment of students from the skilled working class, and there is no way of ruling this possibility out. But given the fact that the relative size of the skilled working class continued to decline between 1880 and 1901-10, I doubt that the figures in Table A2 seriously underestimate the growth of skilled working class enrollment.

Finally, a close examination of Table A3 indicated that on each of the principal dependent variables investigated in this paper, the mean score of "other" is usually near the top of the middle range of values. What is true of mean scores is also true of the standard deviation, the standard error of the mean, and the variance. Even if I granted a linkage bias in the enrollment computations (which I don't), the integrity of the analysis of achievement would not be compromised.

TABLE 1

ENROLLMENTS AT GIRLS HIGH SCHOOL, 1900-1925

	Enrollments	Graduating	% Grad.
1900	1501	194	12.9
1905	2206	232	10.5
1910	2891*	428	14.8
1915	2234	unk	---
1920	1392	unk	---
1925	1467	unk	---

* Not including 260 transferred to other High Schools.

TABLE 2

SIZE OF COHORTS AT GIRLS HIGH SCHOOL, 1901-1922

	COHORT	N	%
	1901-1905	226	24.0
	1906-1910	342	36.3
	1911-1915	186	19.8
	1916-1922	186	20.0
		940	100.0%
Missing Cases		48	
Total Sample		988	

TABLE 3

ENROLLMENT AT GHS BY OCCUPATIONAL GROUP, 1901-1922
(MASTERS INCLUDED AMONG SKILLED WORKERS)

Occupational Group	Number	Percent Excluding Other	Percent Including Other
Businessmen	82	17.0	8.2
Professionals	39	8.1	3.9
White collar & Gov't employees	126	26.3	12.7
Skilled workers	170	35.4	17.2
Semi & unskilled workers	62	12.9	6.2
Other	506	---	51.2
Totals	988	100.0	100.0

Numbers of masters = 47

TABLE 4

SCHOOL ENROLLMENT BY OCCUPATIONAL CATEGORY, GHS, 1901-22
(MASTERS INCLUDED IN MASTERS/MANUFACTURERS)

Occode	Number	Percent Calculated without Missing Cases N=482	Percent Calculated with Missing Cases N=988
Professional	39	8.0	3.9
Proprietor (goods)	59	12.2	5.9
Proprietor (serviced)	14	2.9	1.4
Clerks	35	7.2	3.5
Other White Collar	71	14.7	7.1
Masters/Manufacturers	50	10.3	5.0
White Collar Suprvisor	8	1.6	0.8
Working Class Supervisor	10	2.0	1.0
Skilled Worker	129	26.7	13.0
Semi Skilled (factory)	3	0.6	0.3
Semi Skilled (other)	17	3.5	1.7
Unskilled	17	3.5	1.7
Other Working Class	25	5.1	2.5
Government Employees	12	2.4	1.2
Women-Domestic	1	0.2	0.1
Women-Other	---	---	---
Agricultural/Fisheries	2	1.4	0.2
Other	---	---	---
None	506	(---)	51.2
Rentier, Gentlemen	---	---	---
Total	908	100.0	100.0

TABLE 5

SCHOOL ENROLLMENTS BY OCCUPATIONAL GROUP, GHS AND PHILADELPHIA, 1910 (MASTERS INCLUDED AMONG SKILLED WORKERS)

Occupational Group	GHS(a) (1901-1910) N	%	Philadelphia (1910) N	%	Index of Representativeness
Businessmen(b)	43	14.8	58,302	11.4	1.29
Professionals(b)	23	7.9	6,167	1.2	6.58
White Collar & Gov't Employees	87	30.0	92,386	18.1	1.65
Skilled Workers	108	37.2	138,842	27.2	1.36
Semi & Unskilled workers	29	10.0	215,174	42.1	0.23
Totals	290	100.0	510,871	100.0	
Missing & other	298				

Tau: .16

(a) Based on enrollments between 1901 & 1910 inclusive

(b) If businessmen and professionals are combined into one class, they together account for 22.7% (n=66) of the cohort. For the city as a whole the combined class accounts for 12.6% of the population. The relevant value of the index of representativeness is 1.80.

TABLE 6

SCHOOL ENROLLMENT BY OCCUPATIONAL CATEGORY, GHS AND PHILADELPHIA, 1910 (MASTERS INCLUDED IN SKILLED WORKER CATEGORY)

Occode	GHS		Philadelphia		Index of Representativeness
	N	%	N	%	
Professional	22	8.1	6,167	1.2	6.75
Proprietor (goods)	28	10.3	27,931	7.4	1.39
Proprietor (services)	8	2.9	10,518	2.1	1.38
Clerks	23	8.5	30,115	5.9	1.44
Other White Collar	45	16.6	44,067	8.9	1.86
Masters/Manufacturers	6	2.2	9,853	1.9	1.15
White Collar Supervisor	5	1.8	3,896	0.8	2.25
Working Class Supervisor	5	1.8	6,812	1.3	1.38
Skilled Worker	94	34.8	132,030	25.8	1.34
Semi Skilled (factory)	1	0.3	74,184	14.5	0.002
Semi SKilled (other)	7	2.5	58,359	11.4	0.02
Unskilled	5	1.8	52,774	10.8	0.16
Other Working Class	12	4.4	22,879	4.5	0.97
Government Employees	7	2.5	14,308	2.8	0.89
Women - Domestic	0	0.0	---	---	---
Women - Other	0	0.0	---	---	---
Agricultural/Fisheries	2	0.8	6,978	1.4	0.57
Other	---	---	---	---	---
None/Missing	---	---	---	---	---
Rentier, Gentlemen	0	0.0	---	---	---
Total	270	100.00	510,871	100.0	
Missing & other:	326				

TABLE 7

REPRESENTATIVENESS OF ENROLLMENT AT GHS BY OCCUPATIONAL GROUP, 1920 (MASTERS INCLUDED IN SKILLED WORKERS GROUP)

Occupational Group	GHS(a)		Philadelphia		Index of Representativeness
	N	%	N	%	
Businessmen	34	18.4	56,503	9.3	1.97
Professionals	14	7.6	11,620	1.9	4.00
White Collar & Gov't Employees	37	20.1	123,704	20.5	1.02
Skilled Workers	66	35.8	177,783	29.5	1.21
Semi & Unskilled Workers	31	16.8	233,627	38.7	0.43
Totals	184	100.0	603,237	100.1	
Missing Cases:	200				

Tau: 0.09

(a) Based on enrollments between 1911 and 1922 inclusive

TABLE 8

SCHOOL ENROLLMENT BY OCCUPATIONAL CATEGORY, GHS AND PHILADELPHIA, 1920
(MASTERS INCLUDED IN SKILLED WORKER CATEGORY)

Occupation	GHS		Philadelphia		Index of Represen-tativeness
	N	%	N	%	
Professional	12	6.9	11,620	1.9	3.63
Proprietor (goods)	24	13.9	39,660	6.6	2.10
Proprietor (services)	5	2.9	9,752	1.6	1.81
Clerks	10	5.8	11,125	6.8	0.85
Other White Collar	19	11.0	53,336	8.8	1.25
Masters/Manufacturers	4	2.3	7,091	1.2	1.91
White Collar Supervisor	5	2.9	10,786	1.8	1.61
Skilled Worker	57	33.1	166,997	27.7	1.22
Semi Skilled (factory)	2	1.1	85,867	14.2	0.07
Unskilled	10	5.8	62,420	10.3	0.56
Other Working Class	10	5.8	24,965	4.1	1.41
Government Employees	5	2.9	23,336	3.9	0.74
Women - Domestic	0	0.0	---	---	---
Women - Other	0	0.0	---	---	---
Agricultural/Fisheries	0	0.0	---	---	---
Other	0	0.0	4,003	0.7	0.0
None	---	---	---	---	---
Rentier, Gentlemen	0	0.0	---	---	---
Total	172	100.0	603,237	100.0	
Missing Cases:	392				

TABLE 9

SCHOOL ENROLLMENT BY OCCUPATION, GHS, 1901-1922

OCCUPATION	1901 - 1910 N	 %	1911 -1922 N	 %
Presidents	6	3.2	2	2.1
Physicians	6	3.2	3	3.2
Professional-Residual	7	3.7	7	7.5
Druggist	5	2.7	4	4.3
Grocer	9	4.8	9	9.6
Engineer	7	3.7	2	2.1
Managers	5	2.7	1	1.0
Foremen	5	2.7	5	5.3
Bookkeeper	8	4.3	2	2.1
Salesmen	29	15.6	13	13.9
Clerks	23	12.4	10	10.7
Maker	13	7.0	5	5.3
Carpenter	7	3.7	6	6.4
Tailor	7	3.7	2	2.1
Printer	3	1.6	2	2.1
Mechanic	11	5.9	6	6.4
Laborer	5	2.7	10	10.7
Painter	6	3.2	1	1.0
Widow	26	14.0	10	10.7
Total	185	100.0	93	100.0

% based on occupational sample only.

TABLE 10

Comparison of Class and Stratification Models of School Enrollment, GHS, 1910.

	Masters included in Skilled Workers			Masters included in Business Class		
	N	%	Index	N	%	Likely Index
Business	41	15.2	1.33	64	23.7	2.10
Professional	22	8.1	6.75	22	8.1	6.75
Lower Middle	80	29.7	1.64	80	29.7	1.64
Skilled Working	100	37.1	1.36	77	28.6	1.05
Unskilled Working	26	9.6	0.22	26	9.6	0.22
Totals	269	100.0		269	100.0	
Missing Cases	298			298		

TABLE 11

COMPARISON OF CLASS AND STRATIFICATION MODELS OF SCHOOL ENROLLMENTS, GHS, 1920

	Masters Included in Skilled Worker Category			Masters Included in Business Class		
	N	%	Index	N	%	Likely Index
Business	34	19.7	2.11	52	30.2	3.23
Professional	12	6.9	3.63	12	6.9	3.63
Lower Middle	36	20.9	1.01	36	20.9	1.01
Skilled Worker	61	35.4	1.20	43	25.0	0.85
Unskilled Worker	29	16.8	0.43	29	16.8	0.43
Totals	172			172		
Missing Cases	200			200		

TABLE 12

ENROLLMENT BY OCCUPATIONAL GROUP AND CLASS, 1901-22

	OCCUPATIONAL GROUP (MASTERS IN IV)		CLASS (MASTERS IN I)	
	N	%	N	%
I Business	82	17.1	123	25.6
II Professional	39	8.1	39	8.1
III Lower Middle	126	26.3	126	26.3
IV Skilled Working	170	35.4	129	26.9
V Unskilled Working	62	12.9	62	12.9
VI Other	(509)		(509)	
Total	479	100.0	479	100.0

TABLE 13

Percentage of Students, By Class, GHS & CHS

	GHS		CHS	
	1910 %	1920 %	1910 %	1920 %
Old Middle	34.4	37.1	51.0	43.9
New Middle	30.2	20.4	23.5	20.0
Skilled Working	24.3	25.8	20.1	25.2
Unskilled Working	11.0	16.7	5.4	10.9
Total	100.00	100.0	100.0	100.0

Table 14

Index of Representativeness & Tau

GHS & CHS, 1910 and 1920

	GHS		CHS	
Class	1910	1920	1910	1920
OMC	2.7	3.2	3.4	2.9
NMC	1.6	1.0	1.3	1.0
SWC	0.9	0.8	1.0	1.2
UWC	0.2	0.4	0.1	0.3
Tau	0.16	0.12	0.23	0.13

TABLE 15

CURRICULUM BY COHORT, 1901-1922

CURRICULUM	1901-04	1905-10	1911-15	1916+	% of Total
Academic	16.50	16.90	28.57	48.47	26.16
General	83.08	28.57	71.43	44.79	72.19
Commercial	0.77	48.47	0.00	6.75	1.64
Total	100.00	100.00	100.00	100.00	
n	130	290	147	163	

N = 730   Missing Cases = 258

Significant at .0001 level

TABLE 16

DISTRIBUTION OF STUDENTS: CURRICULUM BY CLASS, 1901-1922

Curriculum	Business	Professional	Lower Middle	Skilled working	Unskilled Working	Other	% of Total
Academic	23.33	31.43	21.19	18.55	22.41	27.32	24.54
General	73.33	68.57	77.97	78.23	75.86	71.73	73.86
Commercial	3.33	0.00	0.85	3.73	1.72	0.95	1.60
Total	100.00	100.00	100.00	100.00	100.00	100.00	
n	119	35	119	127	58	420	

N = 876 Missing Cases = 112

Not significant at .05 level

Masters included in business class

Table 17

Distribution of Students: Class by Curriculum
GHS 1901 - 1922

	Academic		General		Commercial		% of Total
	N	%	N	%	N	%	
Business	28	13.0	88	13.6	4	28.5	13.7
Professional	11	5.1	24	3.7	0	0.0	4.0
Lower Middle	25	11.6	92	14.2	1	7.14	13.4
Skilled Working	23	10.7	97	14.9	4	28.5	14.1
Unskilled Working	13	6.0	44	6.8	1	7.14	6.6
Other	115	53.5	302	46.6	4	28.5	48.0
Total	215	100..0	647	100.0	14	100.0	100.0

Total 876

Missing 112

Not Significant at .05 Level

Table 18

Representativeness of Students Enrolled in Academic Curriculum, By Class, 1901-1922.

Class	School		Academic Curriculum		Index of Representativeness
	N	%	N	%	
Business	120	13.6	28	13.0	0.95
Professional	35	3.9	11	5.1	1.30
Lower Middle	118	13.4	25	11.6	0.86
Skilled Working	124	14.1	23	10.7	0.72
Unskilled Working	58	6.6	13	6.0	0.90
Other	421	48.0	115	53.5	1.11
Total	876		215		
Missing Data	112				

TABLE 19

CLASS BY CURRICULUM AND COHORT, 1901-1922

Class	1901-1910				1911-1922			
	Academic	General	Comm	Total	Academic	General	Comm	Total
Business	16.9	81.5	1.5	100.0	32.7	61.5	5.7	100.0
Professional	26.3	73.7	0.0	100.0	35.7	64.3	0.0	100.0
Lower Middle	11.1	88.9	0.0	100.0	42.8	54.3	2.8	100.0
Skilled Working	11.5	88.5	0.0	100.0	34.1	56.1	9.7	100.0
Unskilled Working	7.4	92.6	0.0	100.0	34.5	62.0	3.4	100.0
Other	19.8	83.1	0.2	100.0	39.7	57.8	2.4	100.0

Table 20

Representativeness of Student Enrollment in Academic Curriculum, By Cohort

	1910 - 1910			1911 - 1922		
Class	School	Academic	Index	School	Academic	Index
Business	13.7	14.4	1.07	15.4	16.2	1.05
Professional	4.0	6.9	1.72	4.1	4.6	1.12
Lower Middle	17.1	11.8	0.69	10.3	9.6	0.93
Skilled Working	16.5	11.8	0.71	12.1	11.7	0.96
Unskilled Working	5.7	2.6	0.45	8.6	9.1	1.05
Other	42.7	52.6	1.23	49.2	48.7	0.98
Total	100.0	100.0		100.0	100.0	
N	472	Missing Courses = 57		N = 37	Missing Courses = 37	

Table 21

Means of Dependent Variables by Curriculum

	Academic	General	Commercial	Missing
Length (Years)	2.97	2.74	1.11	2.49
Grades Completed	2.68	2.55	1.0	2.57
Graduation	0.44	0.43	0.00	0.43
GPA	2.54	2.52	2.42	2.65
GPA - 1st Year	2.68	2.64	2.37	2.75
GPA - last Year	2.58	2.51	2.40	2.73
GPA Differential	-0.26	-0.27	-0.45	-0.20
Absence	6.11	5.56	12.40	6.36
Tardy	3.32	3.80	4.00	3.72
Tab	7.72	7.41	12.73	8.30
Age on Entry	14.27	14.33	16.00	14.30
Age on Leaving	17.28	17.25	16.60	17.00

Table 22

Means By Major Dependent Variables, Controlling for Class

Variable	Business	Professional	Lower Middle	Skilled Working	Unskilled Working	Other
Length	2.68	2.99	2.69	2.72	2.73	2.77
Grades Completed	2.49	2.79	2.46	2.51	2.40	2.61
Graduation	0.41	0.46	0.38	0.46	0.35	0.43
GPA	2.59	2.55	2.57	2.55	2.33	2.54
GPAI	2.70	2.76	2.73	2.69	2.44	2.64
LGPA	2.58	2.55	2.53	2.59	2.46	2.55
DGPA	-0.24	-0.25	-0.34	-0.31	-0.30	-0.23
Absences (p.a.)	6.08	5.90	6.43	6.09	6.78	5.47
Tardiness (p.a.)	3.80	2.94	3.31	3.58	3.78	3.80
Tab	8.06	7.14	7.89	7.69	8.03	7.46
Age Entered	14.50	14.60	14.34	13.93	13.93	14.43
Age Left	17.23	17.75	17.05	16.66	16.94	17.49

TABLE 23

LENGTH, BY CLASS, GHS, 1901-1922

Length	Business	Profess-ional	Lower Middle	Skilled Working	Unskilled Working	Other	% of Total
0.1 - 1.0	12.5	5.5	15.8	16.9	17.6	14.6	14.6
1.1 - 2.0	21.3	13.9	22.8	16.9	15.7	19.4	19.3
2.1 - 3.0	13.9	22.8	14.9	11.0	19.6	13.8	14.3
3.1 - 4.0	40.5	50.0	33.3	38.9	33.3	38.7	38.7
4.1 - 5.0	8.3	8.3	8.8	10.1	5.8	10.5	9.5
5.1 - 6.0	1.8	0.0	1.7	5.9	3.9	2.0	2.5
6.1 - 7.0	0.0	0.0	1.7	0.0	3.9	0.5	0.7
7.1+	1.0	0.0	0.8	0.0	0.0	0.2	0.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
n	108	36	114	118	51	397	

N = 824   Missing Cases = 164

Not significant at .05 level

TABLE 24

GRADES COMPLETED, BY CLASS, GHS, 1901-1922

Grades	Business	Professional	Lower Middle	Skilled Working	Unskilled Working	Other	% of Total
Less than 1	7.87	5.13	8.73	8.96	4.84	7.0	7.39
1	26.77	17.95	26.19	29.85	32.26	24.20	25.81
2	17.32	15.38	15.08	8.21	17.74	16.00	15.08
3	4.72	15.38	10.32	6.72	8.06	6.60	7.29
4	43.31	46.15	39.68	46.27	37.10	46.20	44.23
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00
n	127	39	126	134	62	500	
Mean	2.49	2.79	2.46	2.51	2.40	2.61	
Graduation %	40.94	46.15	38.10	46.27	35.48	43.20	

N = 988

Grades completed and graduation both not significant at .05 level

TABLE 25

Grades Completed by Occode, GHS, 1901-22

Occode	N	<1	1	2	3	4	Total
		Grades Completed					
1 Professional	39	5.13	17.95	15.38	15.38	46.15	100.0
2 Proprietor (goods)	57	5.26	29.82	19.30	3.51	42.11	100.0
3 Proprietor (services)	14	0.0	14.29	21.43	7.14	57.14	100.0
4 Clerks	35	11.43	20.00	5.71	5.71	57.14	100.0
5 Other White Collar	71	5.63	28.17	23.94	12.68	29.58	100.0
6 Masters/Manufacturers	56	12.50	26.79	14.29	5.36	41.07	100.0
7 White Collar Supervisor	8	12.50	25.00	0.0	0.0	62.50	100.0
8 Working Class Supervisor	10	10.00	30.00	0.0	10.0	50.00	100.0
9 Skilled Workers	124	8.87	29.84	8.87	6.45	45.97	100.0
10 Semi Skilled (factory)	3	0.00	33.33	33 33	0.0	33.33	100.0
11 Semi Skilled (other)	17	11.76	23.53	17.65	5.88	41.18	100.0
12 Unskilled	17	5.88	52.94	11.76	11.76	17.65	100.0
13 Other Working Class	24	0.00	25.00	20.83	8.33	45.83	100.0
14 Government Employees	12	16.67	33.33	0.0	16.67	33.33	100.0
15 Women/Domestic	0	---	---	---	---	---	100.0
16 Women/Other	0	---	---	---	---	---	100.0
17 Agricultural	2	0.0	50.0	50.0	0.0	0.0	100.0
18 Other	0	---	---	---	---	---	100.0
19 None	499	7.03	24.10	15.86	6.63	46.39	100.0
20 Rentier/Gentlemen	0	0.0	0.0	0.0	0.0	0.0	100.0

N = 988

Not Significant at .05 level

TABLE 26

Mean Length, Grades Completed, & Graduation Rate, By Occode 1901-1922

Occode	Length	Grades Completed	Graduation
Professional	2.99	2.79	0.46
Proprietor (goods)	2.59	2.47	0.39
Proprietor (services)	3.04	3.07	0.57
Clerks	3.14	2.77	0.51
Other White Collar	2.44	2.32	0.30
Masters/Manufacturers	2.66	2.36	0.39
White Collar Supervisor	2.96	2.75	0.63
Working Class Supervisor	2.22	2.60	0.50
Skilled Worker	2.75	2.51	0.46
Semi Skilled (factory)	2.63	2.33	0.33
Semi Skilled (other)	2.51	2.41	0.35
Unskilled	2.64	1.82	0.24
Other Working Class	2.98	2.75	0.42
Government Employees	2.65	2.17	0.33
Women -Domestic	---	---	---
Women -Other	---	---	---
Agricultural/Fisheries	1.65	1.50	0.0
Other	---	---	---
None	2.77	2.61	0.43
Rentier, Gentlemen	---	---	---

Graduation not significant at .05 level.

TABLE 27

Mean Length, Grades Completed, and Graduation Rate, By Occupation, 1901-1922

Occupation	Length	Grades Completed	Graduation
President	3.34	2.78	.44
Physicians	3.32	3.20	.60
Professional-Residual	2.99	2.71	.41
Druggist	2.99	3.00	.50
Grocer	2.76	2.42	.42
Engineer	3.45	3.10	.70
Managers	3.18	2.57	.57
Foremen	2.22	2.60	.50
Bookkeeper	2.88	2.70	.60
Salesmen	2.32	2.11	.21
Clerks	3.14	2.77	.51
Maker	3.03	2.50	.45
Carpenter	2.58	2.43	.43
Tailor	2.76	2.67	.58
Printer	3.05	2.83	.50
Mechanic	2.56	2.33	.33
Laborer	2.64	1.82	.24
Painter	2.11	1.57	.14
Widow	2.51	2.28	.33

TABLE 28

Grades Completed, By Curriculum, GHS, 1901-22

Grades Completed	Academic	General	Commercial	% of Total
<1	6.05	7.11	42.86	7.42
1	20.47	27.36	35.71	25.80
2	18.14	14.37	7.14	15.18
3	10.23	6.18	7.14	7.19
4	45.12	44.98	7.14	44.41
Total	100.00	100.00	100.00	100.00
Graduated	44.20	42.50	0.00	
n	215	614	14	

N = 876

Missing Cases = 112

"Grades Completed" significant at .0001 level

"Graduation" significant at .005 level

TABLE 29

GRADES COMPLETED, BY GPA, 1901-1922

Grades Completed	A	B+	B-	C+	C-	D	Mean Grade by Grade Completed
<1	0.0	0.0	0.0	0.0	0.0	77.66	—
1	13.21	18.67	23.51	28.81	53.19	14.89	2.3
2	0.0	9.33	12.25	22.03	31.91	3.19	2.3
3	11.32	8.0	4.64	10.51	6.38	3.19	2.4
4	75.47	64.0	59.60	38.64	8.51	1.06	2.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	
Graduated	71.70	62.67	56.95	35.59	6.38	3.19	2.75
Not Graduated	28.30	37.33	43.05	64.41	[illegible]3.62	96.81	2.36
Mean Grades	3.49	3.17	3.00	2.59	1.70	0.35	
n	44	129	267	265	88	83	

Grades completed significant at .0001 level

Graduation significant at .0001 level

N = 876   Missing Cases = 112

TABLE 30

GRADES COMPLETED, BY ABSENCES, 1901-1922

Grades	0.0-2.4	2.5-4.0	4.1-7.0	7.1-12.0	13+	% of total
Less than 1	4.1	1.9	4.7	7.9	19.5	5.74
1	21.7	20.3	20.2	35.0	52.4	25.90
2	12.7	14.2	14.6	17.9	20.7	15.09
3	3.6	6.6	12.0	8.6	3.7	7.32
4	57.4	57.1	48.5	30.7	3.7	45.92
Total	100.0	100.0	100.0	100.0	100.0	100.00
n	221	212	233	140	82	
% graduated	57.1	53.7	44.2	30.0	3.7	

N = 888   Missing Cases = 100

Grades completed and graduation significant at .0001 level

TABLE 31

M.C.A. of Grades Completed

Grand Mean - 2.61

Factors	N	Unadjusted Mean	Eta	Adusted Mean	Beta	Level of Significance
Class						
Business	11	2.59		2.55		
Professional	33	2.79		2.76		
Lower Middle	106	2.57		2.56		
Skilled Working	106	2.47		2.57		
Unskilled Working	52	2.52		2.72		
Other	359	2.67		2.62		
			0.06		0.04	N.S.
G.P.A.						
A	41	3.44		3.30		
B+	107	3.23		3.15		
B-	241	3.09		3.04		
C+	236	2.59		2.61		
C-	82	1.71		1.79		
D	60	.30		.55		
			0.57		0.51	.0001

Table 31 (cont'd)

Curriculum						
Academic	195	2.77		2.73		
General	560	2.58		2.58		
Commercial	12	1.17		2.07		
			0.14		0.07	NS
Absences						
0.0-2.4	182	2.88		2.62		
2.5-4.0	188	2.98		2.66		
4.1-7.0	205	2.78		2.66		
7.1-12.0	121	2.14		2.29		
> 12.	71	1.21		2.94		
			0.36		0.17	.0001

R^2 = .362

R^2 adjusted for degrees of freedom = .350

R^2 (adj) without GPA = .155

R^2 (adj) due to GPA alone = .195

% of R^2 (adj) due to GPA alone = 55.7%

N = 988 Missing Cases - 221 (22.4%).

TABLE 32

MCA For Grades Completed with GPAI

Grand Mean = 2.71

Factor	N	Unadjusted Mean	Eta	Adjusted Mean	Beta	Level of Significance
Class						
Business	98	2.69		2.63		
Professional	25	2.88		2.75		
Lower Middle	84	2.68		2.64		
Skilled Working	92	2.60		2.66		
Unskilled Working	45	2.51		2.76		
Other	309	2.77		2.76		
			0.07		0.04	N.S.
GPAI						
A	48	3.42		3.33		
B+	147	3.39		3.31		
B-	223	2.87		2.83		
C+	156	2.13		2.21		
C-	67	1.78		1.90		
D	12	1.25		1.69		
			0.45		0.39	.0001

Table 32 (cont'd)

Curriculum						
Academic	168	2.90		2.85		
General	478	2.66		2.67		
Commercial	7	1.33		1.83		
			0.13		0.09	.05
Absences						
0.0-2.4	159	3.00		2.87		
2.5-4.0	160	2.91		2.85		
4.1-7.0	176	2.89		2.87		
7.1-12.0	104	2.27		2.40		
>12.0	54	1.50		1.96		
			0.33		0.21	.0001

R^2 =.259

R^2 adjusted =.244

N = 988 Missing Cases = 335 (33.9%).

TABLE 33

MCA For Grades Completed with LGPA

Grand Mean = 3.45

Factor	N	Mean	Eta	Mean	Beta	Level of Significance
Class						
Business	77	3.36		3.35		
Professional	25	3.44		3.39		
Lower Middle	72	3.43		3.46		
Skilled Working	63	3.60		3.58		
Unskilled Working	35	3.31		3.43		
Other	251	3.46		3.45		
			0.09		0.08	N.S.
GPA						
A	40	3.87		3.85		
B+	88	3.78		3.74		
B-	161	3.70		3.67		
C+	154	3.32		3.33		
C-	58	2.65		2.72		
D	22	2.54	0.48	2.66	0.44	.0001

Table 33 (cont'd)

Curriculum						
Academic	147	3.41		3.39		
General	373	3.47		3.48		
Commercial	3	3.00		3.01		
			0.05		0.06	NS
Absences						
0.0-2.4	134	3.63		4.48		
2.5-4.0	146	3.57		3.52		
4.1-7.0	153	3.45		3.51		
7.1-12.0	68	3.18		3.35		
> 12	22	2.41		2.72		
			0.31		0.20	.0001

R^2 = .277

R^2 (adj) = .254

N = 988 Missing Cases 465 (47.1%)

Table 34

MCA of Graduation Rate

Grand Mean = 43%

Factors	N	Unadjusted % Mean	Eta	Adjusted % Mean	Beta	Level of Significance
Class						
Business	111	42		42		
Professional	33	48		47		
Lower Middle	106	42		41		
Skilled Working	106	41		42		
Unskilled Working	52	40		47		
Other	359	42		43		
			0.03		0.03	N.S.
G.P.A.						
A	41	70		65		
B+	107	65		62		
B-	241	60		59		
C+	236	34		35		
C-	82	6		9		
D	60	0		8		
			0.46		0.40	.0001

Table 34 (cont'd)

Curriculum						
Academic	195	46		45		
General	560	43		43		
Commercial	12	0		21		
			0.11		0.06	NS
Absences						
0.0-2.4	182	57		51		
2.5-4.0	188	54		48		
4.1-7.0	205	43		43		
7.1-12.0	121	28		34		
>12	71	4		23		
			0.32		0.17	.0001

R^2 = .243

R^2 adjusted = .229

R^2 (adj) without GPA = .098

R^2 (adj) due to GPA above = .131

% of R^2 explained by GPA alone = 57.2%

N = 988 Missing Cases = 221 (22.4%)

TABLE 35

GPA, BY CLASS, GHS, 1901-22

GRADE	CLASS					
	Business	Professional	Lower Middle	Skilled Working	Unskilled Working	Other
A	7.09	5.13	2.38	6.72	6.45	5.20
B+	21.26	15.38	16.67	14.93	6.45	14.40
B-	22.83	33.33	34.92	27.61	29.03	32.20
C+	28.35	28.21	31.75	26.87	25.81	31.20
C-	11.02	10.26	4.76	13.43	20.97	7.80
D	9.45	7.69	9.52	10.45	11.29	9.20
Total	100.00	100.00	100.00	100.00	100.00	100.00
n	127	39	126	134	62	500
Mean	2.59	2.55	2.57	2.55	2.33	2.54

N = 988

Not significant at .05 level

TABLE 36

Mean GPA, GPA1, LGPA
By Occode, 1901-22

Occode	GPA	CPAI	LGPA
Professional	2.55	2.76	2.55
Proprietor (goods)	2.56	2.69	2.51
Proprietor (services)	2.66	2.81	2.56
Clerks	2.67	2.84	2.76
Other White Collar	2.53	2.69	2.38
Masters/Manufacturers	2.60	2.68	2.66
White Collar Supervisor	2.76	2.84	3.24
Working Class Supervisor	2.21	2.26	2.65
Skilled Worker	2.58	2.71	2.59
Semi Skilled (factory)	2.73	2.93	2.60
Semi Skilled (other)	2.47	2.64	2.52
Unskilled	2.15	2.15	2.47
Other Working Class	2.29	2.44	2.38
Government Employees	2.39	2.55	2.42
Women - Domestic	---	---	---
Women - Other	---	---	---
Agricultural/Fisheries	2.35	2.45	2.40
Other	---	---	---
None	2.54	2.64	2.55
Rentier, Gentlemen	---	---	---

TABLE 37

Mean GPA, GPAI, LGPA
By Occupation, 1901-22

Occupation	GPA	GPAI	LGPA
Presidents	2.57	2.72	2.46
Physicians	2.63	2.81	2.74
Professional-Residual	2.54	2.71	2.50
Druggist	2.69	2.81	2.54
Grocer	2.48	2.59	2.68
Engineer	2.89	3.07	2.90
Managers	2.63	2.78	3.17
Foremen	2.21	2.26	2.65
Bookkeeper	2.63	2.79	2.53
Salesmen	2.53	2.72	2.30
Clerks	2.67	2.84	2.70
Maker	2.50	2.54	2.67
Carpenter	2.74	2.75	2.87
Tailor	2.87	3.03	2.69
Printer	2.84	3.00	3.02
Mechanic	2.50	2.64	2.32
Laborer	2.15	2.15	2.47
Painter	2.43	2.52	2.03
Widow	2.56	2.71	2.39

TABLE 38

CLASS, BY GPA, 1901-1922

Class	A	B+	B-	C+	C-	D
Business	16.98	18.00	9.60	12.20	14.89	12.77
Professional	3.77	4.00	4.30	3.73	4.26	3.19
Lower Middle	5.66	14.00	14.57	13.56	6.38	12.77
Skilled Working	16.98	13.33	12.25	12.20	19.15	14.89
Unskilled Working	7.55	2.67	5.96	5.42	13.83	7.45
Other	49.06	48.00	53.31	52.88	41.99	48.94
Total	100.00	100.00	100.00	100.00	100.00	100.00
% of Total	5.36	15.18	30.57	29.86	9.51	9.51
n	53	150	302	295	94	94

N = 988

Not Significant at .05 level

TABLE 39

CURRICULUM, BY GPA, 1901-1922

GPA	Academic	General	Commercial	Total	n
A	43.18	56.82	0.00	100.00	44
B+	24.03	75.19	0.78	100.00	129
B-	22.47	76.78	0.75	100.00	267
C+	24.15	74.34	1.51	100.00	265
C-	25.00	73.86	1.14	100.00	88
D	22.89	69.88	7.23	100.00	83
% of Total	24.54	73.86	1.60	100.00	

N = 876 Missing cases = 112

Statistically significant at the .01 level

TABLE 40

GPA By Curriculum, 1901-22

GPA	Academic	General	Commercial	% of Total
A	8.84	3.86	0.0	5.02
B+	14.42	14.99	7.14	14.73
B-	27.91	31.68	14.29	30.48
C+	29.77	30.45	28.57	30.25
C-	10.23	10.05	7.14	10.05
D	8.84	8.96	42.86	9.47
Total	100.00	100.00	100.00	100.00
n	215	647	14	
Mean G.P.A.				

N = 876 Missing Cases = 112

Statistically significant at the .01 level

Table 41

GPA, By Absences, 1901-22

Grade	0.1- 2.4	2.5- 4.0	4.1- 7.0	7.1- -12.0	13.0+	% of Total	Mean
A	8.1	9.4	3.9	1.4	1.2	5.6	3.55
B+	20.8	18.4	13.7	7.1	3.7	14.6	4.01
B-	35.7	34.0	31.8	30.0	12.2	31.2	4.71
C+	26.2	28.3	33.0	39.3	26.8	30.6	5.88
C-	3.6	8.0	12.0	13.6	23.2	10.2	7.76
D	5.4	1.9	5.6	8.6	32.9	7.7	13.88
Total	100.0	100.0	100.0	100.0	100.0	100.0	
n	221	212	233	140	82		
% of Total	9.2	15.8	26.2	23.9	24.9		
Mean GPA	2.71	2.66	2.49	2.37	2.03		

N = 888

Statistically significant at the .05 level

TABLE 42

MCA for GPA

Grand Mean = 2.52

Factor	N	Unadjusted Mean	Eta	Adjusted Mean	Beta	Level of Significance
Class						
Business	105	2.59		2.61		
Professional	31	2.54		2.51		
Lower Middle	97	2.58		2.60		
Skilled Working	98	2.50		2.50		
Unskilled Working	50	2.30		2.33		
Other	339	2.52		2.51		
			0.13		0.13	.05
Grades Completed						
1	197	2.31		2.37		
2	115	2.28		2.32		
3	57	2.43		2.45		
4	351	2.73		2.68		
			0.39		0.31	.0001

Table 42 (cont'd)

Curriculum						
Academic	186	2.55		2.53		
General	526	2.51		2.51		
Commercial	8	2.42		2.58		
			0.03		0.02	NS
Absences						
0.0-2.4	173	2.70		2.67		
2.5-4.0	185	2.65		2.62		
4.1-7.0	194	2.48		2.47		
7.1-12.0	111	2.34		2.38		
> 12	57	2.02		2.18		
			0.36		0.27	.0001

R^2 = .235

R^2 adjusted = .223

R^2 (adj) without grades completed = .137

N = 988 Missing Cases = 268 (27.1%)

Table 43

GPAI, By Class, GHS, 1901-1922

CLASS

GPAI	Business	Professional	Lower Middle	Skilled Working	Unskilled Working	Other	% of Total
A	4.72	2.56	1.59	3.73	3.23	3.60	3.44
B+	21.26	15.38	17.46	14.93	14.52	17.60	17.41
B-	25.98	33.33	31.75	26.87	20.97	28.20	27.94
C+	25.20	30.77	30.16	29.10	24.19	30.00	28.95
C-	13.39	7.69	8.73	14.18	25.81	10.40	11.94
D	9.45	10.26	10.32	11.19	11.29	10.20	10.32
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00
n	127	39	126	134	62	500	

N = 988

Not significant at .05 level

Table 44

LGPA, By Class, GHS, 1901 - 22

CLASS

LGPA	Business	Professional	Lower Middle	Skilled Working	Unskilled Working	Other	% of Total
A	4.72	10.26	3.17	5.22	3.23	6.80	5.77
B+	14.96	5.13	11.90	11.19	12.90	12.60	12.35
B-	19.69	30.77	19.05	17.91	17.74	19.80	19.74
C+	15.75	20.51	23.02	19.40	9.68	20.00	19.13
C-	7.09	5.13	4.76	5.97	14.52	6.00	6.48
D	36.80	28.21	38.10	40.30	41.94	34.80	36.54
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00
n	127	39	126	134	62	500	

N = 988

Not Significant at .05 level

Table 45

MCA For GPAI

Grade Mean = 2.65

Factors	N	Unadjusted Mean	Eta	Adjusted Mean	Beta	Level of Significance
Class						
Business	98	2.71		2.72		
Professional	25	2.72		2.66		
Lower Middle	84	2.75		2.78		
Skilled Working	92	2.63		2.66		
Unskilled Working	45	2.42		2.46		
Other	309	2.64		2.62		
			0.14		0.13	.01
Grades Completed						
1	197	2.31		2.36		
2	101	2.54		2.57		
3	50	2.67		2.67		
4	305	2.90		2.86		
			0.46		0.39	.0001
Curriculum						
Academic	168	2.69		2.66		
General	478	2.64		2.65		
Commercial	7	2.37		2.65		
			0.07		0.01	NS

Table 45 (Continued)

Absences						
0.0-2.4	159	2.80		2.76		
2.5-4.0	160	2.75		2.72		
4.1-7.0	176	2.67		2.64		
7.1-12.0	104	2.51		2.57		
13+	54	2.13		2.33		
			0.33		0.21	.0001

R^2 = .264

R^2 adjusted = .250

R^2 (adj) without grades completed = .118

N = 988 Missing Cases = 335 (33.9%)

TABLE 46

MCA For LGPA

Grade Mean = 2.53

Factors	N	Unadjusted Means	Eta	Adjusted Means	Beta	Level of Significance
Class						
Business	77	2.57		2.59		
Professional	25	2.62		2.63		
Lower Middle	72	2.53		2.56		
Skilled Working	63	2.53		2.47		
Unskilled Working	35	2.46		2.49		
Other	251	2.52		2.51		
			0.05		0.07	NS
Grades Completed						
2	115	2.10		2.15		
3	57	2.12		2.16		
4	351	2.74		2.71		
			0.47		0.42	.0001
Curriculum						
Academic	147	2.59		2.61		
General	373	2.51		2.50		
Commercial	3	2.40		2.57		
			0.06		0.08	NS

TABLE 46 (contd)

Absences						
0.0-2.4	134	2.77		2.71		
2.5-4.0	146	2.66		2.62		
4.1-7.0	153	2.41		2.43		
7.1-12.0	68	2.20		2.27		
12	22	2.04		2.37		
			0.35		0.24	.0001

N = 988 Missing Cases = 465 (47.1%)

R^2 = .288

R^2 = .272

R^2 (adj) without grades completed = .108

Table 47

Absences, by Class GHS, 1901 - 22

			Class				
Absences	Business	Professional	Lower Middle	Skilled Working	Unskilled Working	Other	% of Total
0.0-2.4	18.18	21.62	24.35	27.97	21.43	26.76	9.2
2.5-4.0	27.27	27.03	19.15	23.73	25.00	23.18	15.7
4.1-7.0	31.40	29.73	22.61	26.27	32.14	24.72	26.2
7.1-12.0	12.40	13.51	24.35	10.17	7.14	17.23	23.8
13.0+	10.74	8.11	9.57	11.86	14.29	7.48	24.8
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00
n	121	37	115	118	56		441
% of Total	13.63	4.17	12.95	13.29	6.31	49.66	
Mean	6.08	5.90	6.43	6.09	6.78	5.47	

N = 888 Missing Cases = 100

Not significant at .05 level

Table 48

Absences, by Occupational Group, 1901-22

Occode			Absences						
		N	0.0-2.4	2.5-4.0	4.1-7.0	7.1-12.0	13.0+	Total	Mean
1	Professional	37	21.62	27.03	29.73	13.51	8.11	100.00	5.90
2	Proprietor (goods)	55	12.73	23.64	45.45	7.27	10.91	100.00	6.00
3	Proprietor (services)	14	28.57	35.71	14.29	14.29	7.14	100.00	5.70
4	Clerks	31	38.71	19.35	19.35	19.35	3.23	100.00	4.78
5	Other White Collar	64	15.63	17.19	28.13	29.69	9.38	100.00	6.93
6	Masters/Manufacturers	52	21.15	28.85	21.15	17.31	11.54	100.00	6.27
7	White Collar Supervisor	8	37.50	25.0	12.50	12.50	12.50	100.00	5.89
8	Working Class Supervisor	10	40.0	10.0	10.0	0.0	40.0	100.00	11.54
9	Skilled Worker	108	26.85	25.0	27.78	11.11	9.26	100.00	5.59
10	Semi Skilled (factory)	3	0.0	33.33	33.33	0.0	33.33	100.00	9.33
11	Semi Skilled (other)	14	21.43	28.57	28.57	14.29	7.14	100.00	5.17
12	Unskilled	15	20.00	13.33	20.00	13.33	33.33	100.00	11.87
13	Other Working Class	23	26.09	26.09	43.48	0.0	4.35	100.00	4.27
14	Government Employees	12	25.00	25.0	8.33	16.67	25.00	100.00	8.37
15	Women - Domestic	--	--	--	--	--	--	--	--
16	Women - Other	--	--	--	--	--	--	--	--
17	Agricultural/Fisheries	--	--	--	--	--	--	--	--
18	Other	439	26.88	23.69	24.60	17.31	7.52	100.00	4.45
19	None	--	--	--	--	--	--		--
20	Rentier, Gentlemen	--	--	--	--	--	--		--
% of Total		888	9.23	15.77	26.24	23.87	24.89		

N = 888 Missing Cases = 100

Significant at .05 level

TABLE 49

ABSENCES, BY GPA, 1901-1922

Absences	A	B+	B-	C+	C-	D	% of total
0.1- 2.4	36.0	35.4	28.5	21.3	8.8	17.6	24.9
2.5-4.0	40.0	30.0	26.0	22.1	18.7	5.9	23.9
4.1-7.0	18.0	24.6	26.7	28.3	30.8	19.1	26.2
7.1-12.0	4.0	7.7	15.2	20.2	20.9	17.6	15.8
12.1+	2.0	2.3	3.6	8.1	20.9	39.7	9.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
n	50	130	277	272	91	68	

N = 888 Missing cases = 100

Statistically significant at the .05 level

Table 50

Enrollment, By Class and Cohort, GHS, 1901-22

	COHORT		
Class	1901-1910	1911-1912	% of Total
Business	12.88	15.05	13.78
Professional	4.36	3.76	4.11
Lower Middle	16.48	9.95	13.78
Skilled Working	15.72	12.37	14.33
Unskilled Working	5.49	8.33	6.67
Other	45.08	50.54	47.33
Total	100.00	100.00	100.00
n	528	372	
% of Total	58.67	41.33	

N = 900   Missing Cases 88

Significant at .05 level

Table 52

Mean Age of Entry and Leaving, By Class

Class	Mean Age of Entry	Mean Age of Leaving
Business	14.50	17.23
Professional	14.60	17.75
Lower Middle	14.34	17.05
Skilled Working	13.93	16.66
Unskilled Working	13.93	16.94
Other	14.43	17.49
Entire Sample		17.23

TABLE 53

AGE OF ENTRY, BY GPA, 1901-1922

Age of Entry	A	B+	B-	C+	C-	D	% of Total	Mean
Less than 14	31.82	22.41	18.11	12.50	6.98	3.23	15.29	2.66
14	45.45	44.83	43.31	40.28	25.58	22.58	39.29	2.56
15	18.18	22.41	26.77	28.47	37.21	25.81	27.29	2.45
16+	4.55	10.34	11.81	18.75	30.23	48.39	18.12	2.32
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	
n	22	58	127	144	43	31		

N = 425 Missing cases = 563

Statistically significant at the .0001 level

TABLE 54

AGE OF LEAVING, BY GRADES COMPLETED AND GRADUATION, 1901-1922

	Grades Completed						
Age of Leaving	Less than 1	1	2	3	4	% of Total	% Graduating
Less than 16	31.82	45.83	19.72	4.00	3.03	24.29	3.45
16.0-16.9	45.45	25.00	18.31	24.00	9.09	21.07	10.34
17.0-17.9	13.64	14.58	40.85	40.00	28.79	26.79	27.59
18.0-18.9	4.55	11.46	9.86	20.00	25.76	14.64	22.41
19.0+	4.55	3.13	11.27	12.00	33.33	13.21	36.21
n	22	96	71	25	66		

N = 288 Missing cases = 708

Both grades completed and graduation significant at the .0001 level

Working Paper No. 10

Enrollment, Achievement, and Curricula Choice in Philadelphia High Schools, 1885-1940

David Hogan

Many of the ideas developed in the conclusion are the product of many conversations with David Labaree. My debt to him is considerable.

INTRODUCTION

1. Central Manual Training School
2. Southern High & Manual Training School
3. Philadelphia Trades School
4. William Penn High School for Girls
5. Conclusion

INTRODUCTION

This paper examines four different data sets on high school enrollment and achievement in the Philadelphia area: Central Manual Training School, Southern High and Manual Training School, Philadelphia Trades School, and William Penn High School for Girls. For each of these schools we located, coded, and analyzed individual level data on enrollment and achievement. Unfortunately, the data on achievement is scrappy, incomplete, and not uniform across schools, but there is sufficient evidence to indicate that current theories of school achievement and credentialling need to be revised.

A comprehensive theory of educational achievement and credentialling needs to address six distinct issues: (1) the character, and changes in over time, of the relative significance of various measures of school achievement--cognitive or technical skills, affective skills or values, years of schooling, and educational credentials (a function of both years of schooling and the kind--or prestige--of the school attended); (2) the character of, and changes over time in, the process of school achievement; (3) the effects of school achievement upon occupational attainment; (4) the nature of the mechanisms--pedagogical, curricula, organization--that shape the character of the process of school achievement; (5) the nature of allocation processes within the labor market that channel students with different levels or kinds of educational achievement into different jobs; and (6) the dynamics of changes in the process of school achievement. In this paper my focus is principally on the second issue--the character of the process of school achievement --and on a related but conceptually distinct issue, the relation between family background and high school enrollment. (In the conclusion I will have some comments to make on a number of the other issues noted above but these will be limited mainly to discussing the implications of my major focus for these other issues).

Analytically, examinations of the process of school achievement break down into two component parts: (1) the relative impact of family background and grades on educational achievement, and (2) the relative impact of family background, intelligence, and conduct on grades. These two issues, together with the third question noted above (the effect of school achievement upon occupational attainment) constitute what sociologists call the status attainment process. Easily the most significant theoretical question raised by the status attainment process is whether or not the status attainment process is meritocratic: that is, whether occupational attainment is determined by educational achievement (a condition, which, if satisfied, constitutes a "primary" meritocratic relationship), educational achievement by grades ("secondary" meritocracy), and grades by academic performance ("tertiary" metrocracy). If the answer to all three questions is in the affirmative, then it can be argued that the status attainment process is meritocratic in all three senses of the word; if it satisfies one but not all of the conditions, then the S.A.P. can only be viewed as meritocratic in one of the narrower senses of the term. Unfortunately none of the data sets includes all of the variables necessary to make definitive judgements about the character of the process of school achievement at the various schools analyzed. None of the schools, for example, include data on intelligence and only one has data on conduct. Moreover, since we do not have data on occupational attainment, it is not possible to ascertain the degree to which status attainment in Philadelphia satisfies the conditions of a meritocracy in the primary or first sense of the word.

In the remainder of the introduction the principal theoretical approaches to the analysis of the process of school achievement are reviewed. In the sections that follow the relationship between family background and school enrollment and the secondary tertiary levels of the status attainment process are examined.

The most influential of current theories of educational achievement is modernization theory. According to modernization theory, as a society modernizes, ascription is replaced by achievement as the main determinant of income, power, prestige and occupation; educational achievement increasingly mediates the relationship between family background and occupational attainment. This development goes under a variety of names - "meritocratic achievement," "democratic capitalism," or "expanding universalism." "Objective criteria of evaluation that are universally accepted," Blau & Duncan argue, "increasingly pervade all spheres of life and displace particularistic standards of diverse in-groups, intuitive judgement, and humanistic values not susceptible to empirical verification." In modern societies Blau and Duncan claim, "superior status cannot be directly inherited but must be legitimated by actual achievements that are socially acknowledged" (429-30).

The two principal expressions of modernization theory in the social sciences are human capital theories of educational achievement in economics, and functionalist theories of socialization and stratification in sociology. Neo classical economists argue that increases in the level of educational achievement are a consequence of the growth in the demand for technical (or "cognitive") skills, which in turn they believe to be a consequence of mechanization and specialization. Second, they argue that the labor market allocates individuals into the division of labor on the basis of educational achievement. And third, they argue that educational achievement is determined by technical or cognitive ability, that is, the process of educational achievement is meritocratic in nature. Functionalist sociologists (Parsons, Dreeben, Blau & Duncan, Davis, Moore) agree with neoclassical economists that the origins of credentialling lie in the demand side of the labor market and that the labor market allocates individuals meritocratically--and in so doing maximizes productivity and efficiency, motivates individuals to invest in their human capital (everyone their own capitalist) and satisfies democratic norms of justice and fairness. They also agree that the process of educational achievement in schools is essentially meritocratic, or could be made more so if equality of opportunity was extended. They argue, however, that the development of cognitive skills is not the only significant outcome of schooling; they insist that in addition to the development of cognitive skills, schools also socialize students into the norms "required" of modern occupational role--achievement, universalism, independence and specificity. Moreover, they (particularly Parsons & Dreeben), also provide an account of the specific mechanisms within schools that explain how it is that students are socialized into modern norms: it is the ecological characteristics of schooling (age graded classes and curricula, bureacratic authority structures, rotation of teachers, and competitive exams) that account for the socialization of students. Finally, while they agree with neoclassical claims that the demand for labor has increased over time and is responsible, in part, for the growth of schooling and credentialing, functionalist sociologists have exchewed a narrow technical or cognitive interpretation of such skills· instead they argue that successful performance of modern occupational (and civic) roles also requires the internalization of the norms of achievement, universalism, specificty of independence. This, of course, is the "function" of the school.

Arrayed against modernization theories of achievement and credentialing are a variety of demand and supply side approaches. The most important of the demand side critics of modernization theory are Bowles & Gintis. First, like neo-classical economists and functionalist sociologists, Bowles & Gintis argue that the origin of the growth of credentialling is to be found in changes in the demand for labor. They insist, however, that the demand for labor does not change in the way hypothesized by neo-classical economists or functionalist sociologists.

Rather, the crucial aspect of the demand for labor is "affective" or "social" and its differentiation and stratification by the social relations or production. Cognitive and technical skills are important, Bowles and Gintis argue, but certainly not more important than the social or affective. Second, they dismiss the claims of neoclassical economists and functionalist sociologists that the demand side developments are a consequence (or a constituent element) of modernization. They conclude, rather, that the character of the demand curve for labor is a function of the triumph of industrial capitalism, in particular the expansion of wage labor and the transformation of the technical and social division of labor (a process that Marx described as a shift from formal to real subordination in the workplace).

Third, Bowles & Gintis argue that the process of school achievement is not meritocratic and not cognitive in character, but primarily ascriptive and behavioral: success in school is primarily a function of family background and conduct. Moreover, they claim that what is fundamentally important about family background is not so much parental income and educational level although they admit these are important, but the social relations of family life and the character of socialization practices within the family - in particular the level of autonomy and democracy that parents allow their children. Given the significance of these family background effects, Bowles & Gintis conclude that schools do not create inequality as reproduce it intergenerationally, and that schools do so through the operation of one mechanism - the social relations of education:

> The heart of the process is to be found not in the content of the educational encounter - or the process of the information transfer - but in the form: the social relations of the educational encounter. These correspond closely to the social relations of dominance, subordination, and motivation in the economic sphere. Through the educational encounter, individuals are induced to accept the degree of powerlessness with which they will be faced as mature workers." (p. 265).

Finally, Bowles and Gintis imply, although their views are never spelt out, that the credentials labor market is itself meritocratic, although the attainment of credentials itself is not meritocratic. They thus locate the locus of the intergenerational reproduction of social inequality in the school rather than in the labor market.

With one important exception the remaining major theories of educational credentials are supply-side theories. Supply-side theorists claim that the growth of educational credentials is less a response to demand side phenomena, however construed, than of supply side developments - status conflict, job competition, conflicts over cultural capital, or processes of class formation. Each of these theorists differ, albeit not always seriously, in their accounts of the character of allocation processes in the labor market and the character of the process of educational achievement; some of the theorists, however, do not commit themselves to any particular view of one or the other.

Before proceeding with an analysis of these theories, it is useful to look briefly at the one important exception noted above - Christopher Jenck's Inequality. Jencks principal concern is to trace the relationship between inequalities in status of origin, inequalities in school resources and in school performance, and inequalities in adult status. Jencks does not interest or commit himself to any particular view of the nature of labor markets nor a particular view of the origins of credentialling - his interest is solely with status attainment. He argues that measures of school quality do not predict the test scores of students nor length of time in school. IQ scores and family background, however, account for substantial levels of the variation in test scores and school achievement. Jencks also argues that the correlation between school performance and adult success is low. He thus concludes that differences in schooling do not explain adult status differences, that family background and IQ rather than differences in school quality shape school achievement, and finally that "schools serve primarily as selection and certification agencies, whose job is to measure and label people, and only secondly as socialization agencies whose job is to measure and label people, and only secondly as socialization agencies whose job is to change people. This implies that schools serve primarily to legitimize inequality, not to create it" (p. 1135).

Jenck's analysis of inequality and the role of the school in the intergeneration transmission of inequality is relevant to our concerns in two ways. First, his analysis suggests that school achievement is both meritocratic (in that it is based on IQ) and ascriptive (in that is based on family background)--in effect, that both modernization and neo-Marxist accounts of school achievement are each at least partly correct. Second, Jencks, like Bowles and Gintis, does not provide a detailed account of what it is about family background that is so significant to school achievement (as we will see shortly, other theorists, notably Bourdieu & Willis, do provide such an account). And third, no doubt because he did not believe schools to be an important influence on status attainment, Jencks did not attempt to develop a theory which linked school characteristics to outcomes other than IQ test scores or persistence rates--for example, socialization into dominant or stratified norms. Nor did he attempt to broaden his measurement of school effects beyond the crudest quantitative criteria of school resources. Nor did he acknowledge the possibility, even given his crude measures of school educational achievement. Bowles and Gintis have attempted, in their account of differences in the social relations of education within different schools, to unravel the nature of the mechanisms that might account for differences in educational outcomes, but even their theory can at best only explain one set of outcomes (namely those concerned with socialization) and does not exhaust the range of alternative or additional mechanisms within schools that could, in principle, influence characteristics, that the absence of measured effects might not have been due to the absence of such effects but to the fact that schools had significant but uniform effects that would not turn up in multivariate analyses (i.e., Jencks may have confused the similarity of effects with the lack of effects of schooling in general). Such a black box view of schooling - and a very crude one to boot - can hardly do justice to the range of possible influences that schooling could potentially have on the process of educational achievement. For example, given that we know that different schools in Philadelphia employed different processes of school achievement, can these differences be explained by differences in the social relations of education, as Bowles & Gintis propose, or were additional or alternative mechanisms - curricula, ecological, pedagogical, organizational - also involved? An adequate theory of achievement and credentialling obviously cannot avoid the necessity of addressing these issues and to assess differences between schools.

Perhaps the most influential of the supply side theorists is Randall Collins. Collins argues, first, that the credentials labor market is not so much meritocratic as stratified and ascriptive; second, he argues that the supply of educational credentials has increased, not in response to the growth of demand for credentials, but as a consequence of "status competition" between status groups who use educational credentials as a means of gaining access to, or maintaining their privileged access to, high status jobs. The result is a continual upward spiral in educational achievement as measured by educational credentials. Collins does not provide a detailed account of the process of educational achievement within schools, or of the significance of family background in the process. All that he is prepared to commit himself to is a proposition about the character of the significant educational outcomes. Collins argues that "the main activity of schools is to teach particular status cultures, both in and outside the classroom." Schools might well teach technical knowledge, but this is far less important than the fact that they also inculcate "vocabulary and inflection, styles of dress, aesthetic tastes, values and manners" (p1010). It is these non-cognitive outcomes, the teaching of status cultures, that educational credentials credential and form the basis of allocation within the labor market.

A second supply side theorist, Lester Thurow, also avoids offering an account of the process of school achievement. Like Collins he is only interested in the character of the credentials market. Thurow differentiates between two theories of the labor market: a wage competition (or demand) model and a job competition (or supply) model. The first "assumes that people come into the labor market with a definite, pre-existing set of skills (or lack of skills), and that they then compete against one another on the basis of wages." Thurow believes, however, that the evidence does not support such a model; rather the evidence points, he believes, to a jobs competition model in which people do not look for jobs but jobs look for suitable people. Consequently, "the function of education is not to confer skill and therefore increased productivity and higher wages on the worker; it is rather to certify his "trainability" and to confer upon him a certain status by virtue of this certification. Jobs and higher incomes are then distributed on the basis of this certified status." Individuals form into what Thurow calls "labor queues" on the basis of their educational credentials; employers then pick the employees they desire on the basis of what they infer the credential signifies.

Although Collin's and Thurow's accounts of allocation processes within the labor market are slightly different, and although neither provide anything like a detailed account of the process of educational achievement in schools they do agree that what is significant about educational credentials is the kind of training or status culture that credentials signal in the labor market. A third supply side theorist, Pierre Bourdieu, on the other hand, provides no account of the nature of allocation processes within the labor market but he does provide a sophisticated theory of educational achievement within schools.

Like Bowles & Gintis, Bourdieu challenges the meritocratic thesis of modernization theory, namely, the claim that as education becomes an increasingly important determinant of adult success, then the intergenerational transmission (or reproduction) of inequality weakens. He offers a far more elaborate account than Bowles & Gintis provide, however, of why this is so. Bourdieu argues that childrens academic performance is strongly related to parental educational achievement rather than to occupational attainment. To argue this he introduces two concepts: "class ethos" and "cultural capital". The first designates a "system of implicit and deeply interiorized values which, among other things, helps to define attitudes toward cultural capital and educational institutions." (School as a Conservative Force, 32). Cultural capital, on the other hand, refers to that sytsem of meansings, abilities, language forms, sensivilities, tastes, and cognitive styles that are directly and indirectly defined by dominant groups as socially legitimate. Bourdieu argues that whether or not children stay in school, or even do well in school, will depend appreciably on their perceptions of the probability that people of their social class will succeed academically. Bourdieu suggests that "there is a close correlation between subjective hopes and objective chances, the latter tending to effectively modify attitudes and behavior by working through the former." (ibid 35,44). Much as John Ogbu and Paul Willis have proposed, Bourdieu argues that a child's educational and occupational ambitions and expectations are shaped ("structurally determined") products of parental, peer and reference group educational experience and cultural practice. In effect, it is a process of selection through self selection - " a system of circular relations that unite structures and practices": objective structures produce subjective dispositions that produce structured actions which, in turn, reproduce objective structures. (Reproduction, 203).

The role of cultural capital in the process of educational achievement is critical, and complementary to the role of "class ethos." Parent, in sending their children to school, attempt to "invest" their children's cultural capital (inherited from them) in the primary institution of the cultural market - the school. In this sense cultural capital is rather like economic capital, "transmitted by inheritance and invested in order to be cultivated." School achievement, however, is dependent on the degree of congruence between cultural capital at the base of the school's system of achievement, and the cultural capital of the student. The cultural capital of the school, embedded in curricula, pedagogy and organizational features of the school, is far from neutral, profoundly influencing who will succeed and who will fail. For some students, those with the right cultural capital, investment in cultural capital markets (the school) pays off; for others, it doesn't.

In selecting one particular cultural capital as legitimate and the others as illegitimate the school gives success to some and withholds it from others and imposes a definition of the social world that is consistent with the interests of the powerful. First, schools offer

> ...information and training which can be received and acquired only by subjects endowed with the system of predispositions that is the condition for the success of the transmission and of the inculcation of the culture. By doing away with giving explicitly to everyone what it implicitly demands of everyone, the educational system demands everyone alike that they have what they do not give. This consists mainly of linguistic and cultural competence and that relationship of familiarity with culture which can only be produced by family upbringing when it transmits the dominant culture" (1977, 494).

In addition to this process of "differential elimination," the schools also engage in "symbolic violence" and in so doing imposes a definition or theory of the social world. This process is the crux of cultural reproduction and the principal contribution of the school to social reproduction. The experience of schooling teaches children to treat social inequalities and cultural heritage as "given" or "natural": by "taking all children as equal, while implicitly favoring those who have already acquired the linguistic and social competencies to handle middle class culture, schools take as natural what is essentially a social gift, i.e., cultural capital." For both those that succeed and those that fail the cause of success and failure is meritocratic ability or natural inequalities. (Bowles & Gintis describe this as "IQism"). By appearing to be the impartial and neutral transmitter of culture, schools legitimate inequality in the name of meritocratic fairness and objectivity. Social privilege is thus transformed into natural privilege; cultural capital becomes scholastic ability. "By making social hierarchies and the reproduction of these hierarcies", Bourdieu concludes, "appear to be based upon the hierarchy of 'gifts', merit or skills established and ratified by its sanctions, or, in a word, by converting social hierarchies who academic hierarchies, the educational system fulfils a function of legitimation which is more and more necessary to the perpetuation of the 'social order' as the evolution of the power relationship between classes tends more completely to exclude the imposition of a hierarchy based upon the crude and ruthless affirmation of the power relationship" ("Cultural Reproduction & Social Reproduction, 84).

Bourdieu's argument then is an imaginative attempt to theorize the process through which social structure, especially class, shapes educational phenomena (curriculum, pedagogy) and how these in turn reproduce and legitimate inequality. The triumph of meritocracy did not end the intergenerational reproduction of inequality - it merely shifted the mechanism from economic to cultural capital. The class structuration of educational structures, the unequal distribution and educational transmission of cultural capital ensures, first, the intergenerational reproduction of inequality, and second, through the transmutation of social hierarchies into academic hierarchies, the legitimation and "reproduction of the structure of power relations and symbolic relationships between classes." Where

Jencks undertood schooling to be an insignificant mechanism of social reproduction, for Bourdieu it is pivotal. Indeed, Bourdieu proposes that educational institutions are central to a "science of the reproduction of structures" or "the laws that determine the tendency of structures to reproduce themselves by producing agents endowed with the system of predispositions which is capable of engendering practices adapted to the structures and thereby contributing to the reproduction of the structures." (Cultural Reproduction & Social Reproduction, in Karabel & Halsey, 487).

I noted earlier that although Bourdieu provides an elaborate account of the process of school achievement and its principal structures (or mechanisms), he does not provide an account of allocation processes within the labor market. He does provide, however, an account of sorts of the growth of credentialling, although it is highly schematic and bare-boned. His account rests upon an analysis of social class "strategies of reproduction" through which classes attempt "to maintain or improve their position in the structure of class relations by safeguarding or increasing their capital" (Les Strategies de reconversion, 61; quoted Schwartz 551). Different classes have access to different kinds and amounts of capital: economic (property & money), social (networks of social contacts) and cultural (credentials and non-formal cultural knowledge). With the spread of meritocratic ideologies and the growth of corporate capitalism, cultural capital has grown at the relative expense of economic and social capital; particularly for the middle classes and the aspiring working class for whom investments in cultural capital are the only mechanism available to improve their class position, both absolutely and relatively. To maintain and safeguard their economic and social capital, both the proprietary and professional classes have invested heavily in cultural capital. The result has been a continuous upward spiral in educational achievement only marginally, if at all, related to increased skill demands.

Bourdieu's account of the growth of credentialing thus resembles Collins in many respects, although his ostensible substitution of classes and "class reproduction strategies" for Collin's Weberian notions of status groups and status group competition would seem to indicate that Bourdieu looked to Marx rather than Weber for theoretical inspiration. Yet on closer inspection this does not appear to be the case. Bourdieu does not focus on processes of class conflict and class formation characteristic of Marxist analyses. Rather his analysis seems conceptually to resemble the status group competition models of Weber and Collins, for his analysis focuses on individual and group calculations of educational investment rather than class conflict and the significance of educational strategies and behaviors in the process of class formation. It is not by accident that Bourdieu focuses on middle and upper class groups with the means to invest in cultural capital, and not upon the working class who can not afford to invest heavily in cultural capital and who do not "reproduce" through a rationalized policy of investment in cultural capital. Moreover, his analysis fails to address the relationship between schooling and the state, schooling, the labor process and the labor market, and the contradictions and class conflicts that plague the relations between schooling and the political economy. In his quest for a "science of reproduction" Bourdieu has run dangerously close to a kind of left-functionalism in which contradiction and class conflict are overlooked in the quest for the "laws of reproduction."

The last supply side theorists of note are John Ogbu and Paul Willis. Like Bourdieu, neither Ogbu or Willis focus on the demand for labor or the character of allocation processes within the labor market. Rather, again like Bourdieu, their focus is upon the process of school achievement and the mechanisms responsible for differential credentially. In their account of the process of school achievement both Ogbu and Willis stress the active role of children's expectations, values, understandings of the world, peer group assocations and class cultural background in determining differences in educational achievement. Both Ogbu and Willis also provide accounts of the educational mechanisms (or in Bourdieu's terms, "structures") responsible for differential achievement. For Ogbu it is labelling and counselling procedures and the manner in which these reinforce educational and occupational expectations. For Willis it is the degree of congruence between the "official" culture of the school and the class culture of the students and how the degree of congruence influences what Willis calls the "pedagogical exchange": the exchange of hard work, obedience and good conduct for good grades and promotions. Obviously, there is considerable similarity between the accounts of the process and mechanisms of school achievement provided by Bourdieu, Ogbu, and Willis (although there are important differences as well); moreover, all share the same relative indifference to labor market allocation processes, and with the partial exemption of Bourdieu, to the growth of credentialling. Until attention is paid, however, to these issues an integrated and comprehensive theory of achievement and credentialling, will allude us.

This completes the review of the current theoretical approaches to the explanation of the process of school achievement and something of its relationships to the other aspects of the process of status attainment listed at the beginning of the introduction. In what follows four Philadelphia high schools are examined separately to determine the character of the relationship between family background and high school enrollment, and the process of educational achievement at each of the schools. In the conclusion a number of implications of this analysis for a general theory of credentialling will be briefly stated.

I. CENTRAL MANUAL TRAINING SCHOOL

CMTS was opened in 1885 to provide a three year course of instruction in manual training and drawing. The school was intended to provide an alternative and more "practical" education compared to the academic or "intellectual" education provided at CHS. Located initially at 17th & Woods, boys were admitted after finishing the grammar school course "on precisely the same standard as is prescribed for admission to the High School." (J. MacAlister, "Manual Training in the Public Schools of Philadelphia", 41). One hundred and forty three boys were admitted during its first year; by 1890 300 students were enrolled at the school; by 1895, 357; by 1900, 431; by 1905, 627; by 1910, 938.

For our analysis of enrollment and achievement at CMTS, three separate cohorts were coded: 100% samples of the entering classes of 1885 (n=143), 1900 (n=229) and 1906 (n=364). Information for each student was coded for dates of admission and leaving, fathers name and occupation, nativity of student, name of grammar school from which admitted, and cause of leaving. Each of the variables except nativity proved to be reliable or useful variables; in the case of nativity, the vast majority of the students were native born (96.67%), and a mere 1.60% (or 12 individuals) foreign born (the remainder had no information on nativity). Nativity was therefore dropped from the analysis. No information was provided for GPA or conduct. For the analysis of enrollment at the school a five category class model based on occupation was employed; for the analysis of achievement a six category class model based on occupation and relationship to the means of production was used. The character of these models is outlined in detail in Working Paper # . The distribution of students by class model is outlined in Table 1-1, and by cohort, using the 6 category class model, in Table 1-2.

TABLE 1-1

ENROLLMENT AT CMTS, 1885-1906, BY CLASS MODEL

	Five Category Class Model		Six Category Class Model	
	N.	%	N.	%
Business	184	29.44	220	29.41
Professional	38	6.08	38	5.08
Lower Middle	166	26.56	166	22.19
Skilled Working	185	29.60	149	19.91
Unskilled Working	52	8.32	52	6.95
Other	___		123	16.44
Total	625		748	
Missing =	123		0	

Number of Masters = 36

(1) ENROLLMENT

Even a cursory look at the figures reported in Table 1-2 indicates obvious changes in the class composition of the student body at CMTS. The dramatic change was the decline in the percentage of students from the business class, dropping from 40.56% in 1885 to 25.97% in 1906, with most of the drop occuring between 1885 and 1900. The percentage of students from professional households almost doubled between 1885 and 1906, but in absolute terms they constituted, even in 1906, only a small fraction of the enrollment. The percentage of students from the lower middle class increased significantly between 1885 and 1900, from 15.95% to 27.07%, but it then dropped seven points to 20.72 in 1906. The proportion of students at the school from the skilled working class increased marginally between 1885 & 1900, from 16.78% to 17.03% and then hopped to 22.10% by 1906. Finally, the percentage of students from the unskilled working class dropped between 1885 and 1906, from 9.62% to 6.99%, and then increased slightly to 8.56% by 1906.

The figures in Table 1-3 break down by occupational group the figures reported in Table 1-2. Overall, the single largest occupational group to send their sons to CMTS were skilled workers (17.85%). They were followed by proprietors of goods (15.03%) then by miscellaneous white collar (11.72%) and masters & manufacturers (also 11.72%). It is then a considerable distance to the remaining group, led by professionals, with 5.04% of the enrollment.

Simply reporting changes in the percentages of students from different classes provides a good picture of changes in the composition of the students at CMTS, but it doesn't tell us how representative the percentage were. To make such a measurement requires use of U.S. Census data for Philadelphia and the 5 category model of occupational groups the character of which has been outlined elsewhere. By comparing the social composition of the school with that of the city as a

TABLE 1-2

COHORT, BY CLASS, CMTS, 1885-1906

	1885		1900		1904		% of Total
	N	%	N	%	N	%	
Business	58	40.46	64	27.95	94	25.97	29.4
Professional	5	3.50	9	3.93	23	6.35	5.0
Lower Middle	26	15.95	62	27.07	75	20.72	22.1
Skilled Working	24	16.78	39	17.03	80	22.10	19.9
Unskilled Working	5	9.62	16	6.99	31	8.56	6.9
Other	25	20.33	39	17.03	59	16.30	16.4
Total	143	100.00	229	100.00	362	100.00	
% of Total		19.48		31.20		49.32	

N = 734 Missing Cases = 18

Significant at the .05 level

whole (using males 16 and over in the labor force as the criteria) produces an index of representativeness, reported in Tables 1-3, 1-4 and 1-5.

A comparison of the three indices indicates significant changes in the pattern of representation between 1885 and 1906. Largely because the drop in the relative proportion of students from business households was considerably greater than the slight decrease in the relative number of businessmen in the labor force, the index of representativeness for students with fathers in business dropped from 3.37 in 1885 to 2.17 in 1906. For students with professional fathers, on the other hand, the index of representativeness jumped more than threefold, from 1.75 to 6.25, due entirely to the growth in the relative proportion of students enrolled from professional households. However, if students from business and professional households are considered together, the overall exclusivity of the school declined over the 21 year period, from 47.4% of the school's enrollment to 32.5%.

As with students from professional families, the percentage of students from the lower middle class increased between 1885 and 1906 - from 22.0% to 24.7% - but whereas the index for students from the professional class increased, that for students of the lower middle class actually declined. The reason for this is that: the growth in the relative size of the lower middle class in the city as a whole was much greater than the growth in the relative size of the enrollment of students from the same class. For the skilled workers of the city, the pattern of change is quite different. At the same time as the percentage of skilled workers in the city dropped quite dramatically from 42.5% to 27.5% between 1885 and 1906, the percentage of students from households headed by enrolled at CMTS also increased, but by a smaller amount, resulting in a change in the index of representativeness from 0.62 to 1.17. That is, skilled workers ceased to be underestimated and became, instead, slightly overrepresented. It is important to remember, however, that the size of the enrollment of students with fathers who were skilled workers

TABLE 1-3

Cohort, By Occupational Group, CMTS, 1885-1906

Oc. Code	Cohort				
	N	1885	1900	1906	% of Total
Professional	37	13.51	24.32	62.16	5.04
Proprietor (goods)	114	22.81	24.56	52.63	15.03
Proprietor (services)	12	16.67	25.00	58.33	1.63
Clerks	26	15.38	34.62	50.00	3.54
Other White Collar	86	16.28	32.56	51.16	11.72
Masters/Manufacturers	86	30.23	38.37	31.40	11.72
White Collar Supervisor	33	12.12	48.48	39.39	4.50
Working Class Supervisor	12	8.13	50.00	41.67	1.63
Skilled Worker	131	17.56	25.19	57.25	17.85
Semi Skilled (factory)	6	16.67	0.0	83.83	0.82
Semi Skilled (other)	26	15.38	42.30	42.31	3.54
Unskilled	4	0.0	0.0	100.0	0.54
Other Working Class	13	0.0	38.46	61.54	1.77
Government Employees	18	22.22	50.00	20.78	2.45
Women - Domestic	3	0.0	0.0	100.00	0.41
Women - Other	0	—	—	—	—
Aricultural/Fisheries	0	—	—	—	—
Other	17	58.82	29.41	11.76	2.32
None	105	20.95	32.28	46.67	14.31
Renter, Gentlemen	4	100.00	0.0	0.0	0.54
% of Total		19.48	31.20	49.32	100.00

N = 734 Missing Cases = 16

Significant at the .001 level

C = 0.294

TABLE 1-4

Occupational Distribution, Philadelphia, 1880 and CMTS, 1885

	CMTS (1885)		Philadelphia (1880)		Index of Representation
	N	%	N	%	
Business	51	43.2	25,495	12.8	3.37
Professional	5	4.2	4,844	2.4	1.75
Lower Middle	26	22.0	20,008	10.1	2.17
Skilled Working	31	26.2	83,923	42.2	0.62
Unskilled Working	5	4.2	64,411	32.4	0.12
Total	115	100.00	198,681	100.0	
Missing	25		27,812		

Number of Masters = 7

Tau = .237

TABLE 1-5

Occupational Distribution, Philadelphia, 1900, And CMTS, 1900

	CMTS (1900)		Philadelphia (1900)		Index of Representation
	N	%	N	%	
Business	52	27.3	47,353	11.9	2.29
Professional	9	4.7	5,714	3.1	1.51
Lower Middle	62	32.6	65,138	16.4	1.98
Skilled Working	51	26.8	148,132	37.2	0.72
Unskilled Working	16	8.4	131,203	33.0	0.25
Total	190	100.0	397,540	100.00	
Missing	39		23,820		

Number of Masters = 12

Tau = .146

TABLE 1-6

Occupational Distribution Philadelphia, 1910, And CMTS, 1906

	CMTS (1906)		Philadelphia (1910)		Index of Representation
	N	%	N	%	
Business	76	25.0	58,302	11.5	2.17
Professional	23	7.5	6,167	1.2	6.25
Lower Middle	75	24.7	92,386	18.3	1.34
Skilled Working	98	31.3	138,842	27.5	1.17
Unskilled Working	31	10.2	208,196	41.3	0.24
Total	303		503,893	100.00	
Missing	62		6,978		

Number of Masters = 18

Tau = .149

TABLE 1-7

Age By Cohort, CMTS, 1885-1906

Age	Cohort 1885	1900	1906	% of Total
13	1.48	6.25	6.72	5.59
14	44.44	25.00	28.85	30.59
15	31.11	37.05	29.97	32.40
16	20.00	20.09	22.97	21.51
17	2.96	8.48	7.28	6.84
18	0.0	0.23	2.52	1.96
19	0.0	0.45	1.12	0.70
20	0.0	0.45	0.56	0.28
Total	100.0	100.0	100.0	100.00

n
N = 716
C = .201
Significant at the .05 level

is inflated by the presence of 36 heads who were not employees but masters.

Finally, although the index for unskilled workers improved between 1885 and 1906, the situation of unskilled workers was only a little less miserable in 1906 than it has been 21 years previously. At both dates the unskilled working class was chronically underrepresented: in 1906 the number of students from the unskilled working class was only 24% of what was necessary for parity. Still, between 1885 and 1906 the index improved for the unskilled working class, despite the fact that their relative size in the city as a whole declined by almost 10 percentage points between 1885 and 1906. While their position was thus far below parity in 1906, by 1906 a much higher percentage of parents from the unskilled working class sent their sons to CMTS.

In general terms, then, between 1885 and 1906 CMTS grew a little less exclusive and a little more egalitarian in the social composition of its enrollments. Although the number of students from professional families increased, this was easily offset by the decline in the percentage of students from business households and the increase in the percentage of students from lower middle, skilled, and unskilled households. Yet even this very general conclusion has to be qualified. Because these results are derived from an analysis that employs a model that distorts the influence of class upon the structure of enrollments, these results are useful only for measuring changes in the index of representativeness. They are not a reliable guide to the actual class character of enrollments at the school; for this, the results reported in Table 1-2 are more reliable.

I indicated earlier that the nativity variable for CMTS was so heavily skewed that it does not provide a useful means of examining the character of enrollments at CMTS. The data set, however, does provide one other useful variable, age, to examine the character of enrollment at CMTS. (Table 1-7). In general, by 1906 students were a little older when they enrolled at CMTS than the 1885 cohort: whereas 45% of the students enrolling at CMTS in 1885 were 14 or younger, by 1906 the figure had dropped to 35%.

(II) Achievement

Since the CMTS school register included no information on grades completed or G.P.A., only two variables are available for analysis: length of stay and cause of leaving.

Overall, 29.27% of the students stayed one year, 19.05% stayed two years, 49.58% three years, and 2.10% four years. (Tables 1-8) CMTS, it will be remembered, was a three year high school, so at least half the students completed three years. There were some differences, however, across cohorts: For example, whereas 34.53% of the students of the 1885 cohort stayed only one year, by 1906 less than 29% had left by the end of the first year. Or again, whereas only 42.45% of the 1885 cohort completed three years, close to 54% did so.

There was also a close relationship between length of stay and age of CMTS. In fact the relationship was strongly linear: the younger a student enrolled at CMTS, the greater his chance to complete three years of schooling. For example, whereas 76.32% of the students who enrolled at age 13 completed three years, only 28% of the 17% year olds did. Or alternatively, whereas only 13.16% of the students who enrolled at age 13 completed only 1 year, 61.54% of those students who enrolled at age 18 did so. (Table 1-9).

But if length of stay was closely associated with cohort and age, it was not closely associated with class or occupation. Some differences of course existed: the mean length of stay of students from professional families (2.15 years) was, for example, higher then the mean length of stay of students from the unskilled working class (1.89 years); 52.61% of the students

Table 1-8

Length of Stay, by Cohort, CMTS, 1885-1906

Years	1885	1900	1906	% of Total
1	34.53	27.19	28.49	29.27
2	20.86	20.28	17.60	19.05
3	42.45	47.47	53.63	49.58
4	2.16	5.07	0.28	2.10
Total	100.00	100.00	100.00	100.00
n	143	229	364	
Mean	1.85	2.12	2.06	

Significant at the .005 level.

C = 0.165

N = 714 Missing Cases = 34.

Table 1-9

Length of Stay, by Age, CMTS

	Length of Stay					
Age	1	2	3	4	Total	N
13	13.16	10.53	76.32	0.0	100	38
14	23.83	17.29	56.54	2.34	100	214
15	25.21	18.80	52.99	2.99	100	234
16	32.03	24.18	40.52	3.27	100	153
17	38.00	34.00	28.00	0.00	100	50
18	61.54	15.38	15.38	7.69	100	13
19	20.00	0.0	20.00	0.00	100	5
20	50.00	0.0	50.00	0.00	100	2

N = 709   Missing = 41.

Significant at the .0005 level.

C = .268

Table 1-10

Length of Stay, by Class, CMTS, 1885-1906

Length	Business	Professional	Lower Middle	Skilled Working	Unskilled Working	Other
1	27.49	26.32	25.61	29.58	32.00	35.25
2	18.48	18.42	23.78	19.01	22.00	15.57
3	52.61	50.00	47.56	47.89	49.00	46.72
4	1.42	5.26	3.05	3.52	0.0	2.46
Total	100.00	100.00	100.00	100.00	100.00	100.00
Mean	2.07	2.15	2.11	2.05	1.89	1.89

Not significant at .05 level.

C = 0.120.

N = 727 Missing Cases = 23.

Table 1-11

Length of Stay, by Occupational Group, CMTS

OCCODE	N	1	2	3	4
Professional	38	26.32	18.42	50.0	5.26
Proprietor (goods)	110	25.45	19.09	54.55	0.91
Proprietor (services)	12	33.33	25.00	41.67	0.00
Clerks	28	21.43	17.86	57.14	3.57
Other White Collar	87	25.29	21.84	51.12	1.15
Masters/Manufacturers	85	30.59	16.47	50.59	2.35
White Collar Supervisor	32	21.80	40.63	37.50	0.00
Working Class Supervisor	11	9.09	18.18	63.64	9.09
Skilled Worker	131	31.30	19.08	46.56	3.05
Semiskilled (factory)	3	20.00	40.00	40.00	0.00
Semiskilled (other)	25	32.00	24.00	44.00	0.00
Unskilled	4	0.00	25.00	75.00	0.00
Other Working Class	13	46.15	15.38	38.46	0.00
Government Employees	17	41.18	11.76	29.41	17.65
Women--Domestic	3	33.33	0.00	66.27	0.00
Women--Other	0	--	--	--	--
Agricultural/Fisheries	0	--	--	--	--
Other	17	52.94	11.76	29.41	5.88
None	104	32.69	16.35	49.04	1.92
Rentier, Gentlemen	4	0.0	25.00	75.00	0.00
% of Total		29.02	19.53	48.97	2.48

N = 727 Missing Cases = 23

Not significant at .05 level.

Table 1-12

Length of Stay, by Cause of Leaving, CMTS, 1885-1906

Length	Transferred	Graduated	Work	Removed	Unknown	% of Total
1	75.00	2.16	51.55	53.85	43.94	29.08
2	0.00	4.01	36.02	30.77	13.64	19.48
3	0.00	89.81	11.49	15.38	40.91	48.97
4	25.00	4.01	0.93	0.0	1.52	2.47
Total	100.00	100.00	100.00	100.00	100.00	100.00
n	4	324	322	13	66	729
% of Total	0.55	44.44	44.17	1.78	9.05	100.00
Mean	1.35	2.85	1.35	1.28	1.62	

Significant at .0001 level.

C = .621.

N = 729 Missing Cases = 19

Table 1-13

Cause of Leaving, by Length of Stay, CMTS

Cause	Length 1	2	3	4	% of Total
Transferred	1.42	0.0	0.00	5.56	0.56
Graduated	3.30	9.15	81.51	72.22	44.44
Work	78.30	81.69	10.36	16.67	44.17
Removed	3.30	2.82	0.56	0.00	1.78
Unknown	13.68	6.34	7.56	5.56	9.05
Total	100.00	100.00	100.00	100.00	100.00
n	212	142	357	18	729

N = 729   Missing Cases = 19.

Significant at .0001 level.

C = .621.

Table 1-14

Cause of Leaving, by Class, CMTS, 1885-1906

Cause	Business	Professional	Lower Middle	Skilled Working	Unskilled Working	Other	% of Total
Transferred	0.45	2.63	1.20	0.0	0.0	0.0	0.67
Graduated	44.55	47.37	40.36	46.31	36.54	41.60	43.07
Work	43.64	42.11	46.99	42.95	61.54	35.20	44.00
Removed	0.45	0.0	3.01	1.34	0.0	4.80	1.87
Unknown	10.91	7.89	8.43	9.40	1.92	17.60	10.40
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00
n	220	38	166	149	52	125	750

N = 750   Missing Cases = 2.

Significant at the .05 level.

C = .209.

Table 1-16

Cause of Leaving, by Cohort, CMTS, 1885-1906

	Cohort			
Cause	1885	1900	1906	% of Total
Transferred	0.00	0.87	0.82	0.68
Graduated	39.16	42.79	45.88	43.61
Work	44.06	46.29	41.76	43.61
Removed	5.59	1.31	0.82	1.90
Unknown	11.19	8.73	10.71	10.19
Total	100.00	100.00	100.00	100.00
n	143	229	364	736

N = 736   Missing Cases = 12.

Signigicant at the .05 level.

C = 0.149.

Table 1-17

Cause of Leaving, by Age, CMTS

Age	Cause of Leaving Transferred	Graduated	Work	Removed	Unknown	Total
13	0.0	56.10	26.83	0.0	17.07	100.0
14	0.91	50.0	40.91	1.82	6.36	100.0
15	0.0	46.84	43.04	3.38	6.75	100.0
16	0.63	35.85	51.57	0.63	11.32	100.0
17	1.92	28.85	55.77	1.92	11.54	100.0
18	0.0	13.33	60.00	0.0	26.67	100.0
19	0.0	0.0	60.00	0.0	40.00	100.0
% of Total	0.55	43.85	44.54	1.91	9.15	100.0
n	4	321	326	14	67	732

N = 732   Missing Cases = 21.

Significant at the .01 level.

from the business class completed three years of high school compared to 47.56% of the students from the lower middle class. But although such differences existed, they were not of a scale to be statistically significant.

By contrast, length of stay was strongly associated with cause of leaving, satisfying a F test at the .0001 level and producing a contingency coefficient of .621 (Table 1-12). In general, 44.74% left upon graduation, 44.17% left to go to work, 1.78% left because they were removed by their parents, 0.55% left because they were transferred, and 9.05% left for reasons unknown. The mean length of stay for those who graduated was 2.85; for those who left to start work, only 1.35, less than half the average of those who graduated. The reason is obvious: whereas only 2.16% of those who stayed for one year (undoubtedly transfers from other high schools) graduated, 51.55% of those who left to go to work did so at the end of the first year. Or alternatively, whereas 89.81% of all those who graduated stayed three years, only 11.93% of those who left to go to work stayed three years. Alternatively, as the figures in Table 1-13 indicate, whereas 78.30% of those who completed one year and 81.69% of those who completed two years left to go to work, 81.51% of those who stayed three and 72.22% of those who stayed four years graduated.

Cause of leaving was also associated with class, but not as strongly (Table 1-14). A little over 47% of students from professional families graduated whereas only 36.54% of students from the unskilled working class did; 42% of the students from the professional class left to go to work but 61.54% of the students from the unskilled class did. But although cause of leaving was associated with class, it was not associated with occupational group; class, and not merely occupation alone, was the axis that differentiated reasons for leaving.

The distribution of reasons for leaving also varied across time. (Table 1-16). Of the 1885 cohort, 39.16% graduated and 44.06 left to go to work, but for the

1906 cohort the position was reversed: 45.88% graduated and 41.76% left to go to work. In other words, the pressure to leave school to go to work declined over time, although the percentage of students from the unskilled working class who left school to go to work did not decline as much as it did for students from other classes.

Finally, reasons for leaving also varied with age. The younger a student entered the school, the more likely it was he would graduate: 50% of 13 and 14 year olds at entrance graduated, but only 13.33% of 18 year olds at entrance did so. (Table 1-17).

II. SOUTHERN HIGH AND MANUAL TRAINING SCHOOL

SHMTS was opened in 1907 as a two year high school for boys. It offered three courses: Manual Training, Commercial, and General. The majority of students were enrolled in the vocational courses. In 1912, for instance 31.4% of the students were enrolled in Manual Training and 29.7% in the Commercial course. A little less than 39% were thus enrolled in the General Course. The same year the school adopted a 4 year high school curriculum but the distribution of students did not change in subsequent years. (AR, PBE, 1910, 221; ibid, 1912, 185).

For our analysis of student enrollment and achievement at SHMT, we took a 20% sample (n=257) of the entering classes for 1910, 1911, and 1912. The school register, from which the data was coded, included information on date of birth, occupation of students' parents, date entered and left, grades by course, number of absences per semester, and number of times late per semester. Because of the number of missing cases, neither of the two last variables proved useful or reliable.

From the figures in Table 2-2, it is readily apparent that enrollment at SHMTS was heavily weighted toward the upper end of the occupational structure. Students from businessmen alone accounted for almost a quarter of the schools' enrollment and were overrepresented 2.14 times. (If masters were included in the busines class, they would account for slightly over a quarter of the schools' enrollment). Together, students from business and professional families accounted for over 30% of the schools' enrollment although they collectively accounted for only 12.7 of the male labor force 16 and over. If compared to head of households only, the gap would be even wider. Slightly over 21.00% of the schools' enrollments came from the lower middle class, a percentage a little higher than their proportional size in the Philadelphia male labor force. The index of representativeness for the skilled working class was a little below parity; if masters are excluded,

Table 2-1

Enrollment at SHMTS 1910-12 By Class Model

	Five Category Class Model		Six Category Class Model	
	N	%	N	%
Business	49	24.62	54	21.18
Professional	17	6.67	17	6.67
Lower Middle	54	21.18	54	21.18
Skilled Working	53	26.63	48	18.82
Unskilled Working	26	10.20	26	10.20
Other	—	—	56	21.96
Total	199	100.00	255	100.00
Missing	56		2	

Numbers of Masters = 5

Table 2-2

Occupational Distribution, Philadelphia, 1910 and SHMTS, 1910-1912

	SHMTS (1910-1912)		Philadelphia (1910)		Index of Representation
	N	%	N	%	
Business	49	24.62	58,302	11.5	2.14
Professional	17	6.67	6,167	1.2	5.55
Lower Middle	54	21.18	92,386	18.3	1.15
Skilled Working	53	26.63	138,842	27.5	0.96
Unskilled Working	26	10.20	208,196	41.3	0.24
Total	199	100.00	503,893	100.0	
Missing	56		6,978		
Tan = .191					

Table 2-3

Length of Stay, By Class, SHMTS

	Business Professional	Lower Middle	Skilled Working	Unskilled Working	Other	% of Total
0-1.0	87.50	81.25	86.67	80.0	87.88	85.81
1.1-2.0	12.50	18.75	13.33	20.0	12.12	14.13
Total	150.00	100.00	100.00	100.00	100.00	100.00
n	15	17	16	10	33	92

N = 92

Missing Cases = 172

Not significant at the .05 level

C = .213

Table 2-4

Length of Stay by GPA, SHMTS

	A	B+	B-	C+	C-	D	% Of Total	Mean CoPA
0-1	0.0	75.00	66.67	66.67	78.57	94.64	84.04	1.91
1.1-2.0	0.0	25.00	33.33	33.33	21.43	5.36	13.36	2.00
Total	0.0	100.00	100.00	100.00	100.00	100.00	100.00	
n	0	4	6	13	14	56	94	

N = 99 Missing Cases = 163 (63.4%)

Significant at .05 level

C = 0.313

Table 2-5

Grades by Class, SHMTS

	Business	Professional	Lower Middle	Skilled Working	Unskilled Working	Other	% of Total
A	11.11	5.88	9.26	8.33	11.54	1.79	7.84
B+	18.52	23.53	22.52	22.92	34.62	8.93	20.00
B-	33.33	47.06	20.37	27.08	7.69	14.29	23.53
C+	14.81	11.76	24.07	10.42	11.52	12.50	14.90
C-	5.56	0.0	5.56	8.33	3.85	12.50	7.06
D	16.67	11.76	18.52	22.92	30.77	50.00	26.67
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00
n	54	17	54	48	26	56	255
Mean GPA	2.67	2.82	2.57	2.66	2.57	2.31	

N = 255 Missing Cases = 2

Significant at the .005 level

C = .396

the skilled working class was even more underrepresented. Finally, for the unskilled working class, the situation was even worse. With only 10.20% of the school's enrollment, the unskilled working class was highly underrepresented (index=0.24).

For the measurement of school achievement at SHMTS, only two variables are available for analysis: length of stay, and GPA. Length of stay, however, presents something of a problem, since the number of missing cases is very high (over 60%). Moreover, since the school was only a two year school before 1912, students could only complete a maximum of two grades. No students in the sample drawn completed more than 2 years of schooling at SHMTS.

Table 2-3 reports the relationship between length of stay and class. The relationship was not statistically significant. Overall, 85.87% of the students left during or at the end of the first year (mean=0.38); slightly more than 14% left during or completed the 2nd year (mean=1.39). The only really significant departure from this pattern were the students from the unskilled working class, although not in a fashion that one might expect, but the n is so small and the number of missing cases so large it is easy to put too much credence on the results.

The absence of a statistically significant relationship between length of stay and class at SHMTS replicates the results of similar analyses at GHS, CHS, and CMTS. Moreover, as was true of these other schools, the variable that did influence length of stay was G.P.A. (Table 2-4). Although the number of missing cases is so high that confidence in them must be limited, the results are nonetheless interesting. Essentially what the results indicate is that if the achievement process at SHMTS can be described as meritocratic, it was only just so. The mean GPA of those who left by the end of the 1st year was 1.91; of those who stayed on for a second year, 2.0 — hardly a large difference. Moreover, the dividing line between those who left at the end of the first year was not a GPA of A, or B+, or B-, or C+ or even C-, but D. Grade differences ultimately mattered, but only at the very low end of the range of GPA scores. The achievement process at SHMTS then was nothing like fullblooded meritocratic procedure that it was at CHS or GHS, and indeed can only be dubbed meritocratic in the very loosest possible terms, if at all.

SHMTS also differed from CHS & GHS in one further respect. At CHS and GHS, grades were not statistically associated with class: at SHMTS they were, although not in an entirely consistent manner. (Table 2-5). The mean GPA of students from the professional class was considerably higher than the mean GPA's of students from other classes, but the differences between the remaining classes were only slight. As high a proportion of students from the unskilled working class as from the business class maintained an A average, and a higher proportion of students from the unskilled working class maintained a B+ average. Class differences for students with good grades do not seem then to be systematically linked to class rank; it is only when the very lowest grades are examined that class differences exhibit anything like a linear relationship between class and grade average. For example, whereas 11.76% of students from the professional class were unfortunate enough to manage a D average, 16.67% of the students from the business class did so, 18.52% of the lower middle class, 22.92% of the skilled working class, and 30.77% of the unskilled working class.

In order to further test the relationship between GPA and class, an MCA on GPA with class as the independent variable (or factor) was run. The model could not satisfy even the most liberal test of statistical significance; the level of explained variance was less than 1%. If length of stay was not significantly influenced by class but was significantly associated by GPA, GPA itself was not significantly affected by class.

III PHILADELPHIA TRADES SCHOOL

The Philadelphia Trades School (PTS) was opened in September 1906. It was not intended to be a manual training or "mechanic arts" school but a three year "school for the education of artisans" and "the training of intelligent workmen" in "carpentry, plumbing, plastering, electrical construction, bricklaying, iron work and painting." (Minutes, Board of Public Education, March 13, 1906). In its first year it admitted 48 boys; by 1910 it had 176 pupils; by 1915, 589. In 1916 the President of the Board of Education recommended that manual training courses in the city's high schools be "industrialized" through the introduction of specific trade training. Three years later PTS was merged with CHS as the Industrial Department of that School.

The sample we have drawn for analysis is a 25% sample (n=327) of the three entering years 1916, 1917, & 1918, just prior to the merger of PTS with CHS in 1919. The school register provided information on birthdate, birthplace, race, grade admitted to, trade, parents name, address and occupation, reason for leaving, grades by course, conduct by year, absences per year, and number of times late per year. Not all of these proved to be useful: nativity was overwhelmingly American born (97%), trade, conduct, absences and lateness were mostly (90%) missing values, and grade admitted to was basically useless without last grade completed.

(i) Enrollment

The most important statistic to note in Table 3-1 is the very high percentage (45.0%) of students' heads for whom no data on occupation was available. In the 6 category class model (the model in which masters were included in the business class), apart from the unknowns, the single largest body of students was from the skilled working class (20.2%), followed by students from business/professional families. Students from the lower middle class (95%) followed next, with students from the unskilled working class bringing up the rear (8.2%).

When enrollments are analyzed with the 4 catagory stratification model — the model which includes masters in the skilled working class and deletes "others" — the absolute percentages change considerably although the relative positions remain

Table 3-1

Enrollments, By Class Model, PTS

	Four Category Class Model		Five Category Class Model	
	N	%	N	%
Business and Professional	40	22.3	55	16.8
Lower Middle	31	17.3	31	9.5
Skilled Working	81	45.2	66	20.2
Unskilled Working	27	15.0	27	8.2
Other	—	—	147	45.0
Total	179	100.0	326	

Missing Cases = 146

Number of Masters = 15

Table 3-2

Occupational Distribution, PTS, 1916-1918, and Philadelphia, 1920

	PTS (1916-18)		Philadelphia (1920)		Index of Representatives
	N	%	N	%	
Business and Professional	40	22.3	68,123	26.6	0.83
Lower Middle	31	17.3	123,704	20.9	0.82
Skilled Working	81	45.2	177,783	35.4	1.27
Unskilled Working	27	15.0	233,627	16.8	0.89
Total	179	100.0	603,237	100.0	—
Missing	147	—	14,208	—	—

Tan = .089

the same. When these proportions are measured against the relative size of these groups in the cities' labor force (Table 3-2), each group, with the sole exception of the skilled working class, is underrepresented, although not by much of particular note is the performance of the unskilled working class: whereas the index of representativeness for the unskilled working class in the other high schools examined usually hovers around the 0.2-0.3 mark, at PTS the unskilled working class did surprisingly well; indeed, it's index value was only slightly below parity.

As the data reported in Table 3-3 indicate, students from different class backgrounds varied with respect to the grade to which they were admitted at PTS in a statistically significant way. For example, whereas 61.8% of students from business/professional and skilled working class households respectively enrolled in the first grade, only 39.9% and 33.3% of the students from the lower middle and unskilled working classes enrolled in the first grade. On the other hand, whereas 29.1% and 30.7% of students from the business/professional and skilled working classes respectively enrolled in the third grade, 45.2% and 62.9% of the students from the lower middle and unskilled working classes respectively enrolled in the third grade. In effect, a distinct bifurcation along class lines divided students by entering grade; it was not, however, a bifurcation along lines of class rank, but of the business and skilled working classes on the one hand, and the lower middle and unskilled working classes on the other. Why this should be so cannot be determined from the available data: most likely it reflects class differences in geographic mobility.

(II) Achievement

Only two variables were available for the analysis of school achievement at P.T.S.: grades and reason for leaving. Variables that measured length of stay or grades completed were not available.

Overall, less than 1% of the students maintained an A average (3.5 and above)

Table 3-3

Grade Admitted, By Class, PTS, 1916-1918

	Business and Professional	Lower Middle	Skilled Working	Unskilled Working	Other	Total
1	61.8	39.9	62.1	33.3	75.9	65.11
2	9.1	14.9	7.5	3.7	4.0	7.44
3	29.1	45.2	30.7	62.9	19.0	27.45
Total	100.0	100.0	100.0	100.0	100.0	
n	55	31	66	27	147	

Total = 326   Missing = 1

Significant at the .05 level

C = 0.346

Table 3-4

Grade, By Class, PTS, 1916-1918

	Business and Professional	Lower Middle	Skilled Working	Unskilled Working	Other	% of Total
A	1.96	0.0	0.0	0.0	0.0	0.31
B+	1.96	16.13	10.61	3.70	9.52	8.59
B-	27.27	19.35	18.18	14.81	22.45	21.47
C+	43.63	35.48	37.88	37.04	41.50	40.18
C-	13.73	16.17	18.18	25.93	10.20	14.11
D	13.73	12.90	15.15	18.52	16.33	15.34
Total	100.00	100.00	100.00	100.00	100.00	100.00
n	55	31	66	27	147	
Mean	2.23	2.28	2.21	2.06	2.27	

N = 326 Missing Cases = 1

Not significant at .05 level

C = .251

Table 3-5

Reason For Leaving, By GPA, PTS

	A	B+	B-	C+	C-	D	% of Total	Mean
Transferred	0.0	7.14	2.86	3.85	0.0	8.0	4.0	2.46
Graduated	0.0	21.43	14.29	11.54	8.70	8.0	2.0	2.32
Work	—	—	—	—	—	—	—	—
Removed	0.0	0.0	1.43	1.54	2.17	6.0	2.15	1.82
Other/Unknown	0.0	71.42	81.42	83.07	89.13	78.0	81.84	2.23
Total	0.0	100.0	100.0	100.0	100.0	100.0	100.0	
n	0	28	70	131	46	50	325	

N = 325 Missing Cases = 2

Not significant at .05 level

C = .228

Table 3-6

Reason for Levaing, By Class, PTS, 1916-1918

	Business and Professional	Lower Middle	Skilled Working	Unskilled Working	Other	% of Total
Transferred	1.85	16.13	7.58	0.0	1.37	4.01
Graduated	24.07	19.35	16.67	18.52	2.74	12.04
Work	—	—	—	—	—	—
Removed	0.0	3.23	3.03	3.70	2.05	2.16
Other/ Unknown	74.08	61.29	72.73	77.78	93.83	81.79
Total	100.00	100.00	100.00	100.00	100.00	100.00
n	54	31	66	27	146	324

N = 324 Missing Cases = 3

Significant at .0001 level

C = .358

and less than 10% averaged a B+ (Tables 3-4). However, 21.47% of the students maintained a B- average, and a further 40.18% a C+ average. Almost 30% of the students could only manage a C- or D. Compared to the performance of students in other high schools in Philadelphia, the students at PTS did not perform as well academically as did students elsewhere.

Whatever the cause of this grade distribution, it was certainly not associated with class.(Table 3-4). While the mean GPA of students from the unskilled working class was slightly lower than the mean GPA of students from other classes, overall, the differences in mean GPA were quite small and insubstantial.

The absence of a statistical association between class and grade is hardly a surprise, given what we know about school achievement at other high schools in Philadelphia. What is a surprise, however, and for the very same reason, is the absence of a statistically significant relationship between reason for leaving and grades at P.T.S., although the percentage of cases with missing information is so high that it is not possible to accept the results reported in Table 3-5 with any confidence. The same holds true of the results in Table 3-6, reporting a statistically significant relationship between reason for leaving and class at PTS. In general then it is not possible to conclude anything very substantial about the process of school achievement at PTS.

IV WILLIAM PENN HIGH SCHOOL FOR GIRLS

William Penn High School for Girls opened for business on September 8, 1909. A "composite" high school, it was designed to offer a "balanced"curriculum that combined "the general" and "the special". Its first principal, Cheesman Herrick, speaking at the dedication of the school, informed his audience that modern social and economic conditions required a new conception of women's education:

> As life becomes progressively more complicated, and its duties and privileges increase, the demands upon schools which are to prepare for this life are increased. Changed domestic conditions and enlarged industrial and commercial activities of woman, bring the necessity of

> considering anew the adaptation of education for women, that it may better meet these demands...We need in these days a new definition of "preparatory schools", for in truth, all our schools are, or should, so far as possible, definitely and consciously prepare their pupils for the life toward which they are destined. No higher ideal can be set young people in life than to do necessary and useful work, and to prepare for this sort of work, no matter how menial it may seem to be, is the highest education which any school can give." C. Herrick, William Penn High School for Girls: Some Early Beginnings, 1935, 12).

The origins of WPHS date to the introduction of a commercial program into the curriculum of GHS in 1893. Within a year enrollments in the commercial program had grown to 400 and a "Business Annex" was opened at the corner of Broad & Spirng to provide "a good equipment for wage earning immediately upon graduation". Space at the Business Annex was far from sufficient to accomodate the demand; the senior class consquently was moved into the main building of GHS. That proved to provide only temporary relief, and to exacerbate the problem of overcrowding at the main building. In early 1899 the Principle of GHS complained to the Board that "innovation seems to crowd us for accomodations" and to suggest the establishment of an "out-and-out commercial high school for girls". (AR, PBPE 1899, 72). The Board concurred, and in January 1900, formally resolved that the Commercial Department of the High School for Girls be opened with Miss Emily Grahame, then in charge of the Commercial course, as Principle (Journal, PBPE, 1900, 87). When the Commercial High School for Girls opened the following Fall, more than a thousand students enrolled in the Commercial Course at GHS were transferred to the new school, the first of its kind in the U.S.

Within 4 years of the opening of the C.H.S.G., the Board of Public Education, under growing pressure to establish a comprehensive district high school "system" in the city for girls, appointed a committee to investiage the matter. The committee supported the idea, but the Board dragged its feet (Journal, PBPE, 1904, 177). Another committee in 1906 recommended likewise (Journal, PBPE, 1906, 211). In 1908 the Board decided to establish such a system, and authorized the construction of a new high school for girls at the corner of 15th and Mt. Vernon to replace the CHSG. Supt. Brumbaugh was particularly pleased:

> It is unquestionably true that this school will be the largest, best appointed, and most comprehensive vocational school in any city of America. It will accomodate eighteen hundred girls. They will pursue a general cultural course of sufficient scope to admit to any good college, and with this academic discipline they will be thoroughly trained in commerce or library work or domestic science or dressmaking". (AR, PBPE, 1909, 30-31).

Principal Herrick and Supt. Brumbaugh were of one mind in this matter. For Herrick "the modern school" could no longer be satisfied with the "Three R's": it instead had to "take as its ideal the training of the Three H's, i.e., the head, the heart and the hand." "This new type of school", he went on, "will stimulate, not repress, creative instincts; it will find its basis of activity in the material things and the social activities round about it; it will foster that native desire of boys and girls to do, to produce". Herrick thought this new "vocational" ideal would continue to train "mental power", but that it would "develop this power in such ways that young people will be led into and made content with, not pointed away from and made dissatisfed because of the duties which life sets before them". He concluded

> ...the school and college of the Eighteenth Century took as their motto "I Believe"; the school and college of the Nineteenth Century, I Believe and I Think;" but the school and college of the Twentieth Century have taken as their motto "I Believe and Think in Order that I May Work"; in other words, our education tends, and rightly, to become vocational". (Herrick, 13,12).

When the school opened in the Fall of 1909, it was divided into 5 departments: Academic, Commercial, Applied Arts, Household Science, and Library Economy. The Academic Course was intended to be college prep: the Commercial Course was "to train for occupation as wage earners" in the commercial establishments of the city; the Applied Arts course taught designing, sewing, dressmaking, millinery, embroidery, and needle work; the Household Sciences program provided "special training for those who wish to go into homes and become housekeepers and home

> makers"; finally, Library Economy provided special training for Library assistants". (Herrick, 10-11).

For the analysis of enrollment and achievement at WPHS two samples were drawn from the schools' files: a 50% sample (n=253) for the 1910 entering class, and a 50% sample (n=301) of the 1920 entering class. For the 1910 entering class, information was available for each student's birthdate, date entered and left, race, curriculum, whether Jewish or not, father's or guardian's name, and grades by course. Since no information was provided for head's occupation, the city directories were consulted; unfortunately, information could only be found for 121 of the 253 heads. The information available for the 1920 cohort, in addition to the information available for the 1910 cohort, also included data on head's occupation, character or conduct (cooperation, initiative, leadership, personally conscientiousness, reliability), days absent and times late, and nativity of student and student's father. In the analysis of this data, a 4 and 5 category class models were used; the 4 category model removed masters from the combined business and professional class and located them in the skilled working class in order to facilitate comparisons to U.S. Census Occupational data, while the 5 category class model retained the masters in the business/professional class and adds on a residual ("other") class as well.

(i) Enrollment

The data in Table 4-1 compare the distribution of students by class model and by cohort. It is immediately obvious that the 1910 data set poses a serious problem because of the very high number (47.8%) of missing and other cases. Since there is no way of knowing what bias this introduces into the pattern of results, any conclusions regarding the 1910 cohort need to be evaluated with this in mind. To some extent the possible distortion due to the missing cases can be limited by only using the 4 category class model as the basis of comparison,

Table 4-1

Enrollments, By Class and Cohort, WPHS

	Four Category Class Model				Five Category Class Model			
	1910		1920		1910		1920	
	N	%	N	%	N	%	N	%
Business and Professional	40 (40)	33.0 (40.4)	81 (103)	31.1 (39.6)	49	19.3	103	34.9
Lower Middle	33	27.2	57	21.9	33	13.0	57	19.3
Skilled Working	42 (33)	34.7 (27.2)	99 (77)	29.6 (29.6)	33	13.0	77	26.1
Unskilled Working	6	4.9	23	8.8	6	2.3	23	7.7
Other	—	—	—	—	132	52.1	35	11.8
Total	121	100.0	260	100.0	253	100.0	295	100.0
Missing =	132		35		0		6	

Number of Masters: 1910 = 9 1920 = 22

Table 4-2

Occupational Distribution, WPHS, 1910,
and Philadelphia, 1910

	WPHS (1910)		Philadelphia (1910)		Index of Representativeness
	N	%	N	%	
Business & Professional	40	33.0	64,469	12.7	2.59
Lower Middle	33	27.2	92,386	18.3	1.48
Skilled Working	42	34.7	138,842	27.5	1.26
Unskilled Working	6	4.9	208,196	41.3	0.11
Total	121	100.0	503,893	100.0	

Missing = 132 Number of Masters = 9

Tau = .202

Table 4-3

Occupational Distribution, WPHS, 1920, and Philadelphia, 1920

	WPHS (1910)		Philadelphia (1910)		Index of Representativeness
	N	%	N	%	
Business & Professional	81	31.1	68,123	11.2	2.77
Lower Middle	57	21.9	123,704	20.5	1.06
Skilled Working	99	29.6	177,783	29.4	1.01
Unskilled Working	23	8.8	233,627	38.7	0.22
Total	260	100.0	603,237	100.0	

Missing and Other = 35   Number of Masters = 22

Tau = .183

Table 4-4

Occupation, By Enrollment and Cohort, WPHS

	1910		1920	
	N	%	N	%
Professional	10	3.9	8	2.7
Proprietor (goods)	21	8.3	57	19.3
Proprietor (services)	3	1.1	9	3.0
Clerks	7	2.7	8	2.7
Other White Collar	20	7.9	39	13.2
Masters/Manufacturers	15	5.9	29	9.8
White Collar Supervisor	4	1.5	9	3.0
Working Class Supervisor	3	1.1	2	0.6
Skilled Worker	30	11.8	75	25.4
Semi-Skilled (factory)	1	0.4	3	1.0
Semi-Skilled (other)	1	0.4	5	1.6
Unskilled	3	1.9	2	0.6
Other Working Class	1	0.4	12	4.0
Government Employees	2	0.7	1	0.3
Women--Domestic	—	—	1	0.3
Women--Other	7	2.7	2	0.6
Agricultural/Fisheries	—	—	4	1.3
Other	—	—		
None	125	49.4	29	9.8
Rentier, Gentlemen	—	—	—	—
Total	253	100.0	295	100.0

since this model does not include missing and other cases. There is, however, a price to be paid in using the 4 category model, for it inflates the size of the skilled worker category and deflates the size of the business class. To compensate for this, I have included the "true" values in parentheses. These true values are employed in the discussion of enrollments that follows, except for estimating the index of representativeness.

A comparison of the class distribution of enrollments in 1910 and 1920 indicates only minor changes. The percentage of students from the business/professional class remained much the same (40.4% to 39.6%); the proportion of lower middle class students dropped from 27.2% to 21.9%; the percentage of skilled working class students increased slightly from 27.2% to 29.6%; and the percentage of students from the unskilled working class increased from 4.9% to 8.8%.

Tables 4-2 and 4-3 compare the distribution of heads' occupation at WPHS and Philadelphia in 1910 and 1920, and report the representativeness of the occupational distribution at WPHS by occupational group. It should be emphasized again that the value of the index for the business/professional group is deflated by the removal of masters, while the index for skilled workers is inflated by the same amount. The daughters of businessmen and professionals were highly overrepresented in both years; the lower middle class, respectably overrepresented in 1910, was only marginally represented in 1920· the skilled working class slightly overrepresented in both years. Finally, in both years, the unskilled working class was highly underrepresented, albeit less so in 1920 than in 1910.

The figures reported in Table 4-4 break down these broad class categories into discrete occupational groupings. It is clear, for example, that the growth in significance of the business and professional class is almost entirely accounted for by students whose fathers were proprietors of goods rather than services, and by daughters of masters/manufacturers. Again, it is obvious that daughters of skilled workers were the largest single group in the school in 1910, and even more so in 1920.

In general terms then class background strongly influenced enrollments at WPHS: students from business and professional families, although only a small fraction of the city's population, were easily the largest group and dominated enrollment in both years. The skilled working class managed to stay just above parity, as it did in other schools examined. The lower middle class, as it had in GHS and the other high schools examined, sent a considerably lower percentage of its children on to the high school, despite the fact that its relative size in the city increased. And, again like other schools, unskilled working class families were not able to even get close to parity, although their performance improved between 1910 and 1920.

Student enrollment at WPHS reflected more than class background however, for it also reflected the influence of nativity. Almost 62% of the students enrolled at the school had fathers born in a foreign country (Tables 4-5 and 4-6) of these, 112 or 67.8% of the foreign born were born in Russia alone; in fact 31.2% of the fathers of the school's students were born in Russia. Yet father's nativity did not influence enrollment independent of class, since father's nativity and class were related in a statistically significant — if not expected — manner. Roughly equal percentages of foreign born and American born fathers were skilled workers — a little over a quarter, but there the similarity ends. More American born fathers belonged to the lower middle class (28.43% to 16.36%), but fewer foreign born fathers held unskilled occupations (5.45% to 10.78%). Moreover a far higher proportion of foreign born heads were businessmen--chiefly proprietors of goods. Indeed, a little over 26.0% of all foreign born fathers were proprietors of goods, while less than 12% of American born fathers were proprietors of goods.

Table 4-5

Fathers Nativity, by Class, WPHS, 1920

	American Born		Foreign Born	
	N	%	N	%
Business and Professional	27	26.47	69	41.82
Lower Middle	29	28.43	27	16.36
Skilled Working	27	26.47	46	27.88
Unskilled Working	11	10.78	9	5.45
Other	8	7.84	14	8.48
Total	102	100.00	165	100.00
% of Total		38.2%		61.8%

N = 267 Missing Cases = 34

C = .199

Significant at .05 level.

Table 4-7

Daughter Nativity, By Class, WPHS, 1920

	American Born		Foreign Born	
	N	%	N	%
Business & Professional	87	25.80	12	42.86
Lower Middle	53	21.81	3	10.71
Skilled Working	64	26.34	7	25.00
Unskilled Working	21	8.64	1	3.57
Other	18	7.41	5	17.86
Total	243	100.00	28	100.00
% of Total		88.48		11.52

N = 271   Missing Cases = 31

Not significant at the .05 level.

C = 0.146

Table 4-8

Daughters Nativity, by Class, WPHS, 1920

	American Born		Foreign Born	
	N	%	N	%
Business and Professional	87	35.80	2	42.86
Lower Middle	53	21.81	3	10.71
Skilled Working	64	26.34	7	25.00
Unskilled Working	21	8.64	1	3.57
Other	18	7.41	5	17.86
Total	243	100.00	28	100.00
% of Total		88.48		11.52

N = 271   Missing Cases = 31

Not significant at the .05 level.

C = 0.146

Table 4.9

Age of Entry, by Students Nativity, WPHS, 1920

	American Born		Foreign Born	
	N	%	N	%
<12	6	2.42	1	3.45
12-13	22	8.87	2	6.90
14	105	42.34	6	20.69
15	82	33.06	10	24.48
16	24	9.68	7	24.14
17+	9	3.63	3	10.34
Total	248	100.00	29	100.00

N = 277 Missing Cases = 24

C = .194

Not significant at .05 level.

Table 4.10

Age at Entry, by Fathers Nativity, WPHS, 1920

	American Born		Foreign Born	
	N	%	N	%
<12	4	3.85	2	1.18
12-13	5	4.81	19	11.24
14	36	34.62	74	43.79
15	42	40.38	50	29.59
16	13	12.50	17	10.06
17+	4	3.85	7	4.14
Total	104	100.0	169	100.0
Mean		14.58		14.42

N = 273   Missing Cases = 28

C = .179

Not significant at .05 level.

Although a majority of the fathers of the school's students were born outside the U.S., a much smaller percentage (11.52%) of the students themselves were foreign born. When broken down by class two differences, in particular, are noticeable: the higher percentage of businessmen fathers among American born students than among foreign born students, and the diminished size of the lower middle class for both American born and foreign born students.

Finally, students age at entry varied in a statistically significant fashion when measured against occupation, but not with class or father's nativity or daughter's nativity. The mean age of entry of students from business families was 14.44, for lower middle class students 14.55, for skilled working class students 14.58, and for unskilled working class students, 15.05. In other words, age of entry increased as class rank decreased. Age of entry, however, was not related in a statistically significant manner to father's or daughter's nativity, although there were some differences. Generally speaking, students with foreign born fathers started high school a little younger than students with American born fathers, while students born in America started school a little younger than students born elsewhere. (Tables 4-7--4-10)

(ii) Achievement

For the analysis of educational achievement for the 1920 cohort two variables--length of stay and grades--and a set of variables associated with character and conduct, are available. Unfortunately, because of the large number of missing cases and the character of the school records in 1910, only one measure of achievement — grades — is available for the 1910 cohort. No information on graduation or grades completed is available for either cohort. Most of the analysis that follows, therefore, is focused on the 1920 cohort.

(a) Length of stay

Of the 196 students who enrolled in 1920 for whom data is available, 130 or 66% stayed at least 4 years, a considerably higher percentage than at GHS (35.8% for the 1901-22 cohort overall). But whereas at GHS length of stay (not to speak of grades completed and graduations) was closely associated with grades, at WPHS this does not seem to be the case, at least at first glance. The mean length of stay for A level students was lower than all other grades with the sole exception of B- level students. Moreover, although it is true that 46% of the A students completed at least 4 years, it is also true that almost 68% of B+ students, 71% of B- students and 83% of C- students (admittedly the n is small) completed at least 4 years of schooling. Furthermore, the fact that the percentage of those who completed at least 4 years increased as GPA decreased, and the fact that when broken down by length of stay, GPA did not increase but deceased as length of stay increased, points to the conclusion, at least at the level of bivarate statistics, that grades simply had no significant effect on length of stay at WPHS. (Table 4·11)

The absence of a relationship between length of stay and GPA removes, given what one might have expected on the basis of the relationship discovered at CHS & GHS, the potentially strongest variable that might have explained length of stay. Nor did class or occupation have a statistically effect on length of stay. (Table 4·12) The class differences in mean length of stay were small and not systematically linked to class rank, although they do reflect a pattern that reappears quite consistently in the analysis of school achievement — the fact that on many of the measures of school achievement, students from the skilled working

Table 4-11

Age at Entry, By Fathers Nativity, WPHS, 1920

	American Born		Foreign Born	
	N	%	N	%
<12	4	3.85	2	1.18
12-13	5	4.81	19	11.24
14	36	34.62	74	43.79
15	42	40.38	50	29.59
16	13	12.50	17	10.06
17+	4	3.85	7	4.14
Total	104	100.00	169	100.00
Mean		14.58		14.42

N = 273 Missing Cases = 28

C = .179

Not Significant at .05 level.

Table 4-12

Age by Entry, By Students Nativity, WPHS 1920

	American Born		Foreign Born	
	N	%	N	%
< 12	6	2.42	1	3.45
12-13	22	8.87	2	6.90
14	105	42.34	6	20.69
15	82	33.06	10	24.48
16	24	9.68	7	24.14
17+	9	3.63	3	10.34
Total	248	100.00	29	100.00

N = 277 Missing Cases = 24

C = .194

Not significant at .05 level.

Table 4-13

Length of Stay, by Students Nativity, WPHS, 1920

	American Born		Foreign Born	
Length	N	%	N	%
1	9	5.26	1	5.26
2	18	10.53	1	5.26
3	30	17.54	4	21.05
4	95	55.56	12	63.16
5	19	11.11	1	5.26
Total	171	100.00	19	100.00

N = 190

C = .083

Not significant at .05 level.

Table 4-14

Length of Stay, by Fathers Nativity, WPHS, 1920

	American Born		Foreign Born	
Length	N	%	N	%
1	6	10.00	4	3.13
2	6	10.00	12	9.38
3	13	21.67	21	16.41
4	24	40.00	82	64.06
5	11	18.33	9	7.03
Total	60	100.00	128	100.00
Mean Length		3.22		3.43

C = .258

Significant at .01 level.

N = 188   Missing Cases = 113.

Table 4-15

Length of Stay by Conduct

Length	Excellent	Good	Fair	Poor
1				
2	0.00	0.00	0.00	3.85
3	18.18	22.86	18.92	19.23
4	63.64	65.71	68.92	69.23
5	18.18	11.43	12.16	7.69
Total	22	35	74	26

N = 157

C = .199

Not significant at the .05 level.

Table 4-16

Length of Stay, By Studdnts Nativity, WPHS 1920

	American Born		Foreign Born	
Length	N	%	N	%
1	9	5.26	1	5.26
2	18	10.53	1	5.26
3	30	17.54	4	21.05
4	95	55.56	12	63.16
5	19	11.11	1	5.26
Total	171	100.00	19	100.00

N = 190

C = .083

Not significant at .05 level.

Table 4-17

Length of Stay, By Fathers Nativity, WPHS, 1920

Length	American Born		Foreign Born	
	N	%	N	%
1	6	10.00	4	3.13
2	6	10.00	12	9.38
3	13	21.67	21	16.41
4	24	40.00	82	64.06
5	11	18.33	9	7.03
Total	60	100.00	128	100.00
Mean Length		3.22		3.43

C = .258

Significant at .01 level.

N = 188 Missing Cases = 113

class outperformed students from the lower middle class. Nor finally, did students nativity have any apparent significant effect on length of stay. (Table 4-13)

Although length of stay was not affected in any significant way by GPA, class or students'nativity, it was significantly related to three variables in the data set — father's nativity, conduct and age — but not quite in the way that might be expected. First, the mean length of stay of students with foreign born fathers was 3.43 years, while that of students with American born fathers was not higher but lower 3.22 years. (Table 4-14) Seventy-two percent of the students with foreign born fathers completed 4 or more years of high school, but only 58% of the students with American-born fathers did so. These surprising results might of course confound the influence of class with the influence of fathers nativity, given the high correlation between the two. Second, length of stay was very strongly (c=.644) related to students conduct: 100% of the students with a record of excellent and good conduct completed at least 3 years, 98% of those with a fair conduct record di so, but only 28% of those with a poor conduct record did so. (Table 4-15) Yet the distribution of cases is sufficiently distorted (for example, only 5 sutdents were graded excellent and the mean conduct grade of students with 2 years of high school is based on an n of 1) to arouse our suspicions that perhaps not all is what it appears to be. Length of stay and the age of student at entry to WPHS were also strongly related: the younger the student, the longer the stay. (Table 4-16) For example, whereas 81.82% of the students who enrolled at WPHS in 1920 before they turned 14 completed 4 years of high school, whereas 62.22% of 14 year olds, 40.32% of 15 year olds, and 45.45% of 16 or older students completed 4 years. Although the relationship between age of entry and length of stay was not perfectly linear, it was nonetheless quite strong.

Finally, length of stay was also statistically related to age at leaving: the older the student, the longer the student had stayed in school. (Table 4-17)

Table 4.18

MCA For Length Of Stay, WPHS, 1920

Grand Mean = 3.71

Factor	N	Unadjusted Mean	ETA	Adjusted Mean	BETA	Level of Significance
Class						
Business	63	3.75		3.76		
Lower Middle	30	3.80		3.78		
Skilled Working	36	3.59		3.58		
Unskilled Working	8	3.77		3.82		
Other	12	3.57		3.60		
			.18		.18	NS
Father's Nativity						
American	39	3.73		3.76		
Foreign	109	3.70		3.69		
			.02		.01	NS
Conduct						
Excellent	20	3.87		3.85		
Good	33	3.65		3.69		
Fair	72	3.68		3.67		
Poor	23	3.74		3.73		
			.14		.15	NS
Age at Entry						
Less than 13	18	3.91		3.92		
14	67	3.82		3.82		
15	45	3.54		3.54		
16+	18	3.53		3.53		
			.30		.31	.005

Table 4.19 --Continued

Grand Mean = 3.71

Factor	N	Unadjusted Mean	ETA	Adjusted Mean	BETA	Level of Significance
GPA						
A	11	3.49		3.48		
B+	95	3.74		3.76		
B-	36	3.67		3.66		
C+	5	4.02		3.92		
D-	1	2.89		2.61		
			.22		.25	.05

R^2 = .197
R^2 adjusted for degrees of freedom = .106
R^2 adjusted without GPA = .072
R^2 adjusted without age at entry = .021

N = .301 Missing Cases = 189 (62.8)

But in addition to the fact that age at leaving was statistically associated with length of stay, it was also associated with class, although not with occupation Overall, 27.6 of the students left before their 17th birthday, with very little variation by class. A further 37.5% left between their 17th birthday and their 18th birthday, but with quite distinctive class differences: for example, whereas 27.85% of students from business homes left, 57.27% of the students from skilled working class home left. Again, whereas 29.11% of the students from the business class left between their 18th and 19th birthdays, less than 7% of the students from the skilled working class did so. Students from the two classes left the school after turning 19 in roughly approximate percentages, although the percentage of students from the unskilled working class was much higher.

To answer the questions raised by the relationship between length of stay on the one hand and father's nativity, conduct, age at entry and age at leaving, on the other, and to assess the relative influence of each independent available upon length of stay, a series of multivariate analyses (MCA) were undertaken. Five factors were entered into the first equation: class, grades, conduct, age, and father's nativity (Table 4-13) After adjustment for degrees of freedom, all five factors combined explained only 10.6% of the variance in length of stay. Of the 5 factors, three were insignificant — class, fathers nativity, and conduct. With respect to class, it seems that class rank did not systematically effect length of stay at WPHS: after adjusting for the influence of other factors, the highest mean length of stay was sustained by students from the unskilled working class. Yet although the influence of class did not operate systematically by class rank, it was a lot more powerful (as measured by the relative strength of the respective beta's) than father's nativity. Indeed, after adjusting for the combined effect of all other factors including father's nativity the value of beta was still the same as the value of eta. Although neither class nor father's nativity were statistically significant influences upon length of stay, father's nativity were statistically significant influences upon length of stay, father's nativity was a lot less significant than class.

Within the nativity factor itself, both the unadjusted and adjusted mean length of stay for American born fathers was higher than than the respective means for foreign born fathers, although once again, the values of eta and beta were extremely low. Father's nativity was obviously not an important influence on length of stay at WPHS. And neither was student's nativity. In an identical MCA, with student's nativity substituted for father's nativity, the value of beta dropped to zero and the R^2 (adj) to 0.08. Its impossible to conclude that nativity, either the father's or the student's, and any influence on length of stay at WPHS. The positive association discovered between length of stay and father's nativity in the bivariate analysis was plainly due to the influence of other independent variables strongly correlated with father's nativity, most likely, class.

At first glance conduct seems to systematically influence length of stay. But the adjusted mean length of stay for those students with a poor conduct record jumps back up to a level higher than the adjusted mean for those with fair and even good conduct records. Although the beta for conduct was .15, it was not a statistically significant result. When the individual components of conduct (cooperation, initiative, leadership, conscientiousness and personality) were substituted for the aggregate conduct variable, the beta's were in general small, the factors not statistically significant, and R^2 very low (below .10).

In sum, although bivariate statistics indicated a strong association between length of stay and father's nativity, and between length of stay and conduct, with a multivariate analysis in which, the influence of other independent variables is controlled for, neither independent variable appears significant.

Two of the five factors, GPA and age at entry, however, did appear to

Table 4-19

Length of Stay, By Age at Entry, WPHS, 1920

	Age at Entry					
Stay	13	14	15	16+	% of Total	Mean Age
1	0.0	6.67	6.45	4.55	5.61	14.55
2	4.55	12.22	9.68	9.09	10.20	14.45
3	9.09	8.89	32.26	27.27	18.37	14.89
4	81.82	62.22	40.32	45.45	55.61	14.27
5	4.55	10.00	11.29	13.64	10.20	14.70
Total	100.00	100.00	100.00	100.00	100.00	
n	22	90	62	20	196	

N = 196   Missing Cases = 105

C = .324

Signficiant at .05 level.

significantly affect length of stay, although one of the two, GPA, had not appeared to do so in the bivariate analysis. But as the means for GPA are examined, it is apparent that GPA, both before and after adjusting for the influence of other factors, did not systematically influence length of stay, as it had done at CHS and GHS. At WPHS the influence of GPA on length of stay was almost random: students with a GPA of C+ secured the highest unadjusted and adjusted means, while students with a GPA of A, secured the lowest unadjusted and adjusted means. In effect the relatively high (for this particular model) eta and beta were an artifact of the large but random spread of the means, and not a consequence of the systematic influence of GPA upon length of stay.

This does not appear to be so with the fifth factor, age at entry, for the influence of age of entry upon length of stay was both systematic and significant. Students who started school young stayed at school the longest, and the younger one started the longer one attended. Moreover, the influence of age upon length of stay did not wane after adjusting for the influence of other factors - indeed, it increased slightly. What all this means, however, is not immediately apparent, for age at entry could be a proxy for a number of factors - family economy, which we know to be strongly influenced by class, intelligence, which again is influenced by family background, or school achievement itself, which we also know (from contemporary data) to be influenced by family background. Or age of entry might not, in principle at least, reflect the influence of any of these variables but simply reflect a relatively benign association between age and school leaving - namely, that in 1920, most children left high school when they passed the age of compulsory attendance.

To test this, separate MCA was run. The first substituted age at leaving for age at entry in the model. The results are reported in Tables 4-19 and 4-20. The results indicate that the older the student when she left school, the

Table 4.20

MCA For Length Of Stay, WPHS, 1920
(With Age of Leaving)

Grand Mean = 3.71

Factor	N	Unadjusted Mean	ETA	Adjusted Mean	BETA	Level of Significance
Class						
Business and Professional	63	3.75		3.74		
Lower Middle	29	3.80		3.79		
Skilled Working	36	3.59		3.63		
Unskilled Working	8	3.77		3.74		
Other	12	3.57		3.60		
			.18		.13	NS
Father's Nativity						
American	39	3.73		3.76		
Foreign	109	3.70		3.71		
			.02		.01	NS
Conduct						
Excellent	20	3.87		3.89		
Good	33	3.65		3.66		
Fair	72	3.68		3.70		
Poor	23	3.74		3.65		
			.14		.15	NS
GPA						
A	11	3.49		3.38		
B+	95	3.74		3.73		
B-	36	3.67		3.73		
C+	5	4.02		3.99		
D	1	2.89		2.79		
			.22		.26	.05

Table 4·20--Continued

Grand Mean = 3.71

Factor	N	Unadjusted Mean	ETA	Adjusted Mean	BETA	Level of Significance
Age of Leaving						
Less than 16	21	3.59		3.60		
17-17.9	66	3.59		3.59		
18-18.9	38	3.82		3.80		
19+	23	3.99		3.98		
			.31		.30	.01

R^2 = 0.187
R^2 adjusted = 0.08
R^2 adjusted without age at leaving = 0.02

N = .301 Number of Missing Cases = 153 (50.8%)

longer the student had stayed at school. Moreover, this was true both before and after adjusting for the influence of other factors. The beta's for age at entry and age at leaving were almost identical; the former was only 1 point higher than the latter. The R^2 (adjusted for degrees of freedom) for the model that included age at entry was slightly higher than the R^2 for the model that included age at leaving (.106 to .08 respectively), but both were very low. The first model could thus only explain about 10% of the variance in length of stay, and the second model even less than that. It is clear, however, that even these small levels of explained variance are largely the result of age differences in entering and leaving the school, for when the models were run without either age factor the level of explained variance dropped to around the 2% mark. In comparison, when GPA was dropped from the two models, the level of explained variance dropped much less, to a little over 7%. In effect, the two age variables, rather than GPA, class, father's nativity, student's nativity, or conduct, were the important independent variables, although it must be emphasized again, that their combined influence was very small.

Where then does all this leave us? Clearly the dynamics of educational achievement, defined in the present context as length of stay, were quite different at GHS and CHS than the dynamcis of educational achievement at WPHS. At both GHS & CHS, GPA was easily the most important independent variable influencing length of stay, grades completed and graduation; at WPHS it was insignificant. Indeed, at GHS and CHS class and the other remaining independent variables did not exert any signficant influence on school achievement. At WPHS class was relatively more important at either GHS or CHS, with stronger beta's and a stronger impact on R^2 when deleted from the relevant MCA models. Moreover, the levels of explained variance generated by the MCA's at CHS & GHS were much higher than the levels generated by the MCA's for WPHS. And finally, when GPA was dropped from the MCA models of achievement at GHS and CHS, the level of explained variance dropped precipitiously; in comparison, when GPA was dropped from the MCA for WPHS, R^2 dropped but not by a significant amount, and certainly nowhere as sharply as the R^2 after deleting the age variables from the model.

What we are left with then is two distinct processes of educational achievement – a meritocratic process at GHS & CHS in which GPA was the overwhelmingly important variable, and a process at WPHS in which precious little, and certainly not GPA, seemed to matter very much at all, apart from age, and even that only explained around 8% of the variance. What we can conclude is that length of stay at WPHS was essentially a function of enrollment and age, rather than the class background, nativity (whether of student's father or the student herself), GPA, or conduct. Whereas the process of educational achievement at CHS & GHS was quintessentally meritocratic, WPHS exhibited no particular interest in linking academic achievement with length of stay. It did not matter much who one was, where one came from, what one's parents did, how hard one worked in school, how one behaved in school, or how academically successful one was, most everyone stayed at the school for roughly the same length of time, that is approximately 4 years. WPHS, to a considerable extent by intent and design, was an institution preoccupied with child care, vocational training, and channelling students into a stratified labor market. To what extent it promoted, recognized and rewarded academic achievement is unknown at the moment, but it certainly did not link academic achievement to length of stay. WPHS, rather than CHS and GHS, represents, in other words, the prototype of urban, mass, terminal secondary education in 20th century America.

(5) Grades

At the three other high schools for which grades are available — CHS, GHS and SHMTS — grades were not strongly influenced by class or any of the other available independent variables. At WPHS this appears to be the case for 1920 for some but not all of the independent variables, and not true at all for the 1910 cohort. Multivariate analysis of GPA, however, points to the conclusion that like length, GPA was not significantly affected by any variable except conduct, and even its influence was very slight. Age, the only important variable to be associated with length of stay, appears to have had little or no effect on GPA

Although grade levels do not appear to be statistically related to occupational groups for the 1910 Cohort they do appear to be so related to class. The mean grades of students from the business and the lower middle class were somewhat higher than the mean grades of students from other classes, although the distribution of grades within each class do not appear to be all that different. Twenty-eight point five percent, 42%, and 24% of students from the business, lower middle and skilled working classes respectively maintained at least a B+ average, whereas 16.6% and 18.1% of the students from the unskilled and residual classes maintained at least a B+ average. On top of this, the distribution of cases is spread so thin across the individual cells (more than

20% of the cells have less than 5 cases) that it would be unwise to make too much out of the table. (Table 4-21)

The number of cases is not a problem with the 1920 cohort. Neither class nor occupational group were significantly related to grades for the 1920 cohort. Whereas 74.6% of students from the business and professional classes maintained at least a B+ average, almost 79% of lower middle and skilled working class students, 78.26% of the students from the unskilled working and 80% of the students from the residual class also maintained at least a B+ average. (Table 4-22)

In addition to class and occupational grouping, both age at entry and age at leaving also failed to satisfy tests of statistical significance. This failure contrasts quite starkly with the strong association between the two age variables and the first measure of educational achievement, length of stay. For both variables, a slight relationship to GPA can be glimpsed - the mean age of students declines as grades decline, at least for the first three grades, and the mean age of leaving of students increases slightly as GPA declines - but in neither case was the relationship statistically significant.

But if class, occupation and age were not statistically related to GPA, at least two variables were: father's nativity and conduct. First, father's nativity: whereas 72.12% of the students with American born fathers maintained an A average, only 9.47% of the students with a foreign born father did so, although whereas a little over 74% of the former had at least a B+ average, 82% of the latter did so. (Table 4-23) Conduct was also significantly related to GPA. (Table 4-24) In principle, conduct is a particularly intriguing variable since it is often argued--by Rosenthal and Jacobson, Bowles and Gintis, Ogbu, Willis, Rist, and others--that school grades are, in part, a function of conduct in the school. Moreover, Labaree found that at CHS up until 1867 academic performance and school behavior were not differentiated in the calculation of student grades. To the extent that grades are a function of general behavior or conduct, to that extent the process of academic achievement is not meritocratic, at least if meritocratic is narrowly construed in terms of

Table 4-21

Grades by Class, (1910)

	Business & Professional	Lower Middle	Skilled Working	Unskilled Working	Other	% of Total
A	10.2	12.2	6.0	16.6	0.0	4.7
B+	18.3	30.3	18.1	0.0	18.1	19.3
B-	22.4	15.1	18.1	33.3	28.7	24.5
C+	42.8	33.3	45.4	33.3	35.6	37.9
C-	5.1	3.0	6.0	0.0	5.3	4.7
D	2.5	6.0	6.0	16.6	12.1	8.7
Total	100.00	100.00	100.00	100.00	100.00	100.00
n	49	33	33	6	132	
Mean	2.57	2.67	2.50	2.46	2.39	

N = 253

Significant at the .01 level

C = .391

7'(b)

Table 4-22

Grades by Class

Grades	Business	Lower Middle	Skilled Working	Unskilled Working	Other
A	12.62	21.05	11.69	26.09	20.00
B+	65.05	57.89	66.23	52.17	60.00
B-	14.56	15.79	19.48	21.74	11.43
C+	3.88	5.26	1.30	0.00	2.86
D	3.88	0.00	1.30	0.00	5.71
Total	103	57	77	23	35
Mean	3.04	3.11	3.10	3.22	3.17

N - 295

C = .199

Not statistically significant.

Table 4-23

Grades, by Father's Nativity, WPHS, 1920

	American Born		Foreign Born	
	N	%	N	%
A	23	22.12	16	9.47
B+	54	51.92	122	72.19
B-	23	22.12	25	14.79
C+	2	1.92	5	2.96
C-	--	--	--	--
D	2	1.92	1	0.59
Total	104	100.00	169	100.00

N = 273   Missing = 28.

C = .225

Significant at .01 level.

Table 4-24

Table of GPAR by Condrr

GPAR	GRADE	Excellent	Good	Fair	Poor
A		13.64	5.41	7.79	7.14
B+		77.27	89.19	59.74	39.29
B-		4.55	5.41	32.47	35.71
C+		0.00	0.00	0.00	17.86
D		4.55	0.00	0.00	0.00
Total		22	37	77	28

N = 164

C = .491

Significant at the .0001 level.

intellectual competence or performance. Whereas 91.91% of those who received an "excellent" for conduct and 94.60% of those who received a "good" for conduct averaged at least a B+ GPA, less than 67% of those who received a "fair" for conduct and 46.43% of those with a "poor" conduct averaged at least a B+ GPA. Conversely, less than 10% of those students who received at least a "good" for conduct averaged a GPA of B- or below, while 32.47% of those with a "fair" for conduct and a little over 53% of those with "poor" conduct did so.

The variable conduct was constructed by averaging the scores of 5 separate grades for behavior: cooperation, initiative, leadership, conscientiousness, and personality. When examined against GPA, each of the separate conduct variables was related to GPA in a statistically significant fashion; moreover, the relationship in each case was very strong, significant at least at the .0001 level. Furthermore, the value of the contingency coefficient (C) was in no case lower than .430; the highest was .465 (the relationship between grades and personality). But although the relationships between grades and the various measures of conduct were statistically significant, contingency tables do not demonstrate the direction or strength of causality. In principle, grades could be as much the cause of conduct as the effect. Unfortunately, there is no statistical method of settling the issue definitively--even MCAs do not allow the attribution of causal direction. Still, it is worth examining MCAs for both GPA and conduct to examine the effect of each on the other.

Tables 4-25 and 4-26 report findings of the MCAs for GPA, the first with age of entry, the second with age of leaving. In the first table, neither class, father's nativity, student's nativity or age of entry had any significant effect on GPA when the influence of other factors are controlled for. The only factor with any significant relationship to GPA was conduct. Moreover, given the fact that the values of eta and beta were identical, the relationship between conduct and GPA was not in any way diminished even when the influence of other factors was controlled for. But this is hardly any cause for celebration, and for two reasons. First, the pattern of both the unadjusted and adjusted means for conduct was not entirely systematic or linear, since the adjusted mean for good and fair students was higher than the mean for excellent students. Second, all factors combined, including conduct, could only explain 2% of the variance in GPA, after adjusting for degrees of freedom. Without conduct, the model could only explain 1% of the variance in GPA. When age at learning is substituted for age at entry, age of leaving is significantly related to GPA in addition to conduct, but the substitution of age at leaving for age at entry adds only another 1.4% to the value of R^2.

In order to test the relationship between GPA and the five constituent components of the conduct variable, each of the five components were substituted for the aggregate conduct variable. The beta's ranged from .11 (for leadership) to .24 (for conscientiousness), while the level of explained variance was in all instances less than 6%.

In sum: as with length, so too with GPA. The exceptionally low levels of explained variance for the two variables point to the conclusion that the process of educational achievement at WPHS, whether conceived in terms of length of stay or GPA, was a process basically independent of family background (class, occupation, father's nativity, student's nativity) or school related behavior (GPA, conduct, absences, lateness for length of stay; conduct, absences, lateness for GPA). I have already emphasized the dramatic differences between CHS and GHS on the one hand, and WPHS on the other, when school

Table 4-25

MCA for GPA With Age of Entry, WPHS, 1920

Grand Mean = 2.97

Factor	N	Adjusted Mean	ETA	Adjusted Mean	BETA	Level of Significance
Class						
Business	63	2.97		2.95		
Lower Middle	30	3.06		2.90		
Skilled Working	40	2.96		2.95		
Unskilled Working	8	2.92		2.91		
Other	22	2.98		2.99		
			.09		.11	NS
Father's Nativity						
American	41	2.96		2.95		
Foreign	141	2.97		2.98		
			.01		.04	NS
Student's Nativity						
American	139	2.97		2.98		
Foreign	16	2.93		2.87		
			.03		.09	NS
Conduct						
Excellent	20	2.96		2.95		
Good	36	3.05		3.04		
Fair	75	2.99		3.00		
Poor	24	2.79		2.79		
			.23		.23	.05
Age at Entry						
Less than 13	21	2.91		2.91		
14	71	2.94		2.93		
15	45	2.97		2.97		
16+	18	3.16		3.17		
			.20		.22	NS

Table 6-25--Continued

R^2 = .109

R^2 adjusted = .02

R^2 adjusted without Conduct = .01

R^2 adjusted without Age at Entry = .0063

N = .301 Missing Cases = 146 (48.5%)

Table 4-26

MCA For Grade Point Average With Age Of Leaving WPHS 1920

Grade Mean = 2.97

Factor	N	Unadjusted Mean	ETA	Adjusted Mean	BETA	Level of Significance
Class						
Business	63	2.95		2.95		
Lower Middle	30	3.03		3.03		
Skilled Working	40	2.96		2.97		
Unskilled Working	8	2.92		2.91		
Other	14	2.98		2.95		
			.09		.09	NS
Father's Nativity						
American	41	2.96		2.95		
Foreign	114	2.97		2.96		
			.01		.03	NS
Student's Nativity						
American	139	2.97		2.97		
Foreign	16	2.93		2.90		
			.03		.07	NS
Age at Leaving						
Less than 16.9	21	2.74		2.76		
17-17.9	66	2.98		2.97		
18-18.9	38	3.05		3.05		
19+	30	3.00		3.03		
				.27	.26	.05

Table 4-26 --Continued

Grade Mean = 2.97

Factor	N	Unadjusted Mean	ETA	Adjusted Mean	BETA	Level of Significance
Conduct						
Excellent	20	2.96		2.94		
Good	36	3.05		3.04		
Fair	75	2.99		3.00		
Poor	24	2.79		2.80		
			.23		.23	.05

R^2 = .129
R^2 adjusted = .034
R^2 adjusted without Conduct = .013
R^2 adjusted without Age of Leaving = .008

N = .301 Missing Cases = 146 (48.5%)

achievement is measured by GPA. In one important respect, however, the comparison is unfair, since neither the GHS or the CHS data sets include any measures of conduct, apart from absences for the GHS data set. In view of this, we simply don't know, nor could we know, whether the dynamics of educational achievement at CHS and GHS, as measured by GPA, were in any way related to conduct. And even if they were, we would have no way to resolve the chicken and egg issue of causal direction: which variable was cause and which variable was effect. Even though we know that conduct was related to GPA at WPHS, we can't determine whether differences in GPA were a result of differences in conduct. Moreover, the relationship is so weak (as measured by the level of explained variance) that even if we know which caused what, we could hardly take much comfort from the findings - essentially grade performance was not significantly influenced by any of the variables available.

This of course does not mean that school achievement as measured by GPA was a totally arbitrary or random process, since we were not able to enter into our models data on other variables that might conceivably influence GPA: intelligence, for example, or some other measure of conduct (industry? reliability?) not included in the measure of conduct we do have. Still, given our finding that none of our available measures of conduct had, individually or collectively, any significant effect on variations in GPA, it seems unlikely that other measures of conduct would have any as well. As for intelligence, nothing in the data sets allows us even to speculate about its possible significance in the process of school achievement.

(c) Conduct

The WPHS data set included five usable measures of conduct: cooperation, initiative, leadership, conscientiousness, and personality. The five variables were analyzed both individually and together as an aggregated variable, conduct.

First, the aggregate variable, conduct. Conduct was not significantly associated with any of the major independent variables in the data set — class, occupation, father's nativity, student's nativity, age at entry, and age at leaving — except one: GPA. (Table 4-27) Where between 36% and 38% of those students who received a conduct grade of good or excellent secured at least a B+ GPA, 65.79% of those with fair conduct received a B- GPA and 100% of those with poor conduct maintained a GPA of C+. Furthermore, each of the individual components of conduct — cooperation, initiative, leadership, conscientiousness and personality — were not statistically related to any of the independent variables except GPA. Moreover, the measures of association were, in each case, at least at the .0005 level, and the value of the contingency coefficient (C) never less than .430.

Tables 4-28 & 4-29 present the results of the MCA's with conduct as the dependent variable. The first table includes age at entry as a factor, the second age at leaving. In both models class has no significant effect on conduct, although after adjusting for the influcne of other factors there is a notable spread between the highest mean (3.01 for daughters of skilled workers) and the lowest (2.04 for daughters of unskilled workers). It will be recalled from Tables 4-39 & 4-40 that the spread of the adjusted means for GPA was much smaller, and indeed, that the adjusted mean of students from the homes of unskilled workers was slightly higher than the mean GPA of students from the lower middle class. Not much can be made of this of course, but it is at least a hint that class had a stronger impact upon conduct than it had upon GPA.

Although the relationship between conduct and father's nativity did not appear to be significant when subject to bivariate analysis when entered as a factor into a multivariate model it turned out to be significant. Students with American born fathers secured higher grades for conduct than students with foreign born fathers, even when adjusted for the influence of other factors.

This would seem to suggest the possibility of pervasive stigmatization of students along ethnic lines, except for the fact that although American born students fared considerably better than foreign born students, the differences were not significant when adusted for the influence of other variables. Of course, stigmatization might still have occured on the basis of father's nativity, but it seems unlikely.

In the bivariate and multivariate analyses of length of stay reported earlier, age of entry and age of leaving were easily the most significant variables in their respective models, although both models explained only the merest levels of variance. In the bivariate analysis of GPA, both age variables were statistically significant, but only one, age at leaving, survived multivariate analysis with its reputation safe. As with length of stay, however, the overall level of explained variance was exceedingly small. With conduct as the dependent variable, neither age at entry nor age at leaving satisfied even the most liberal test of significance. With multivariate analysis, age of entry remained insignificant, but age of leaving was signficant at the .05 level. Yet if one looks at the unadjusted and adjusted means, age of leaving is not consistently or systematically linked to conduct. But neither is it entirely random; rather it appears to be U shaped. What to make of this is not at all obvious, since there is no apparent reason why the youngest and the oldest at leaving would receive the highest grades for conduct, and those in-between the lowest, given that conduct was not significantly affected by age at entry.

In the multivariate analysis of GPA, conduct was easily the most important, with the highest betas, the strongest test of significance, and the greatest impact on R^2 when removed from the model — indeed, in the model that included age at entry, conduct was the only significant factor — although the overall level of explained variance was exceedingly low (R^2 adjusted= .02 with age at entry included and .03 with age at leaving included). With conduct the dependent variable, the situation is almost a mirror image: although father's nativity significantly affected conduct grades, the association with GPA is easily

Table 4-27

Conduct by Grades

	A	B+	B-	C+	D
Excellent	23.08	15.89	2.63	0.00	100.00
Good	15.38	30.84	5.26	0.00	0.00
Fair	46.15	42.99	65.79	0.00	0.00
Poor	15.38	10.28	26.32	100.00	0.00
Total	13	107	38	5	1

N = 164

C = .491

Significant at the .000 level.

Table 4·18

MCA For Conduct With Age Of Leaving, WPHS, 1920

Grand Mean = 2.32

Factor	N	Unadjusted Mean	ETA	Adjusted Mean	BETA	Level of Significance
Class						
Business	62	2.33		2.30		
Lower Middle	30	2.30		2.25		
Skilled Working	40	2.40		2.39		
Unskilled Working	8	2.12		2.08		
Other	14	2.21		2.31		
			.13		.13	NS
Father's Nativity						
American	41	2.48		2.38		
Foreign	113	2.26		2.30		
			.18		.07	.01
Student's Nativity						
American	138	2.34		2.34		
Foreign	16	2.12		2.15		
Age at Leaving						
Less than 13	20	2.50		2.40		
14	66	2.25		2.26		
15	38	2.21		2.22		
16+	30	2.50		2.52		
			.23		.21	.05
GPA						
A	11	2.36		2.38		
B+	101	2.18		2.19		
B-	37	2.56		2.54		
C+	5	3.20		3.17		
			.43		.40	.0001

Table 4.15--Continued

R^2 = .259
R^2 adjusted = .196
R^2 adjusted without GPA = .041
R^2 adjusted without Age at Leaving = .168

N = .154 Missing Cases = 147 (48.8%)

Table 4.29

MCA For Conduct With Age Of Entry, WPHS, 1920

Grand Mean = 2.32

Factor	N	Unadjusted Mean	ETA	Adjusted Mean	Beta	Level of Significance
Class						
Business	62	2.33		2.34		
Lower Middle	30	2.30		2.26		
Skilled Working	40	2.40		3.01		
Unskilled Working	8	2.12		2.04		
Other	14	2.21		2.29		
			.13		.16	NS
Father's Nativity						
American	41	2.48		2.41		
Foreign	113	2.26		2.28		
			.18		.10	.01
Student's Nativity						
American	138	2.34		2.33		
Foreign	16	2.12		2.21		
			.13		.07	NS
Age at Entry						
Less than 13	21	2.38		2.34		
14	70	2.32		2.32		
15	45	2.33		2.33		
16+	18	2.22		2.29		
			.08		.03	NS

Table 4·29--Continued

Grand Mean = 2.32

Factor	N	Unadjusted Mean	ETA	Adjusted Mean	BETA	Level of Significance
GPA						
A	11	2.36		2.36		
B+	101	2.18		2.19		
B-	37	2.56		2.54		
C+	5	3.20		3.17		
			.43		.40	.0001

R^2 = .220
R^2 adjusted = .153
R^2 adjusted without GPA = .018

N = .301 Missing Cases = 147 (48.8%)

the strongest and its contribution to the level of explained variance the most important. But again, very little can be made of this, first, because the effect of GPA on mean grades for conduct was not systematic or linear, and second, because the overall level of explained variance is almost as low as the level of explained variance for GPA. Although it was easily the strongest factor affecting conduct, the overall impact of all factors combined, including GPA, was still very low.

To assess whether different relationships existed between the individual components of conduct and the same set of factors, a set of MCA's for each individual component of conduct was run with and without GPA as a factor. In no case did the adjusted R^2 (with GPA included) go higher than .182; with GPA excluded the adjusted R^2 in no instance went higher than .05. The conduct variables with the highest R^2 (adjusted) were personality and leadership; the lowest initiative and conscientiousness. For each of the dependent variables easily the strongest (in most cases the only significant) variable was GPA. Nothing else mattered. In effect, whether the aggregate conduct variable or any of the individual conduct variables are used as the dependent variable, the results are identical: collectively the independent variables account for only the barest minimum of the variance in conduct.

In sum: much as I concluded with regard to length of stay and GPA, grades for conduct — whether measured by its individual components or by the aggregate variable — were not significantly affected by family background or by school performance. The allocation of grades for conduct, like length of stay and GPA, was essentially an autonomous process, largely independent of measurable influences. Moreover, for the most part conduct didn't really matter, since it had only the most marginal effect on GPA and length of stay. Whether a student received an Excellent, Good, Fair or even Poor didn't greatly influence school achievement. Most likely they served bureacratic purposes only, a means of controlling student behavior in a large institution. In no discernable way were they linked to academic achievement as conduct was at CHS before 1859. The only conduct that really mattered was turning up at school and not being kicked out of the school for particularly outrageous behavior--if a student could at least manage that, then she would have no need to fear that her conduct would undermine her academic performance or shorten her stay. By the same token, of course she would have been mistaken to hope that exemplary behavior would guarantee academic achievement or prolong her stay at the school. Conduct neither hindered nor helped school achievement.

One final measure of conduct, absences per year, was also examined. At GHS the number of absences per year was significantly related to all four measures of school achievement--length of stay, grades completed, graduation, and GPA-- in both bivariate and multivariate analyses. Indeed, its significance was such that it appeared that at GHS it could very well be a reliable proxy for conduct, and it was on that assumption that an interpretation of school achievement at GHS based on Paul Willis' notion of "pedagogical exchange" was developed. When the absences per year variable was analyzed at WPHS, however, it was not related in a statistically significant way to any of the variables in the data set--class, father's nativity, student's nativity, GPA, age at entry and leaving, or conduct. Given what we know about the radically different dynamics of school achievement at GHS and WPHS, however, this result does not necessarily mean that absences are not a good proxy for conduct at GHS, particularly given the strong association between absences and all the measures of school achievement at GHS.

Conclusion

In the introduction to this paper I indicated that a comprehensive theory of school achievement and credentialling needs to address at least six topics. The data we have analyzed so far permits us to draw some tentative conclusions about two of these issues: the character of the process of school achievement, and the relationship on the one hand, between changes or variations in the process of school achievement over time or between schools, and on the other, changes in the institutional character of schooling--particularly changes in curriculum.

In addressing questions about the character of the process of school achievement, two distinct but related questions need to be answered: (1) the relative significance of grades and family background in determining levels of educational achievement (years of education, grades completed, graduation), and (2) the relative effect of intelligence, conduct and family background on grades themselves. Unfortunately, the nature of our data sets do not permit us to answer these questions fully or adequately. For some schools we have no data on grades, for others limited data on educational achievement, for all but one no data on conduct, and for all schools no data on intelligence. Any conclusions that we arrive at then concerning the nature of the process of educational achievement are suggestive and tentative, and not final judgements.

The most general conclusion to be derived from our analysis of high school achievement in Philadelphia is that the process of educational achievement was not uniform across schools; rather, it varied by school. At CHS and GHS educational achievement (as measured by length of stay, grades completed and graduation) was strikingly meritocratic in that it was influenced by GPA and GPA alone. Moreover, GPA itself was not influenced in any significant fashion by family background. (It must be noted, however, that in the absence of any information on intelligence or conduct for students at these two schools it is impossible to arrive at final judgements about the process of school achievement at GHS and CHS). In effect, insofar as the available data allow conclusions to be drawn, the data suggest that the process of educational achievement at CHS between 1850 and 1920 and at GHS after 1900 was meritocratic in both the secondary and tertiary senses outlined at the beginning of this paper. (Status attainment was meritocratic in the primary sense when occupational attainment was explained by educational achievement rather than family background). The situation is less clear for the remaining schools, largely because of insufficient data; but it is still possible to offer tentative judgements as to the nature of the achievement processes at these schools.

At CMTS length of stay was related to class and cause of leaving, but since we have no data on intelligence grades or conduct, we are not in a position to determine to what extent length of stay was influenced by grades, or by conduct, and grades were determined by class, conduct, and ability. At PTS, where we do have data on grades but no information on length of stay and ability, GPA was not significantly linked to cause of leaving or class, although class was significantly related to cause of leaving. At SHMTS, length and GPA were related, but so were GPA and class--an instance of what might be called ascriptive achievement. Finally, at WPHS, length of stay was not a function of grades, conduct or any of the measures of family background; nor were grades a function of conduct or family background. The only variable that mattered was age; for all intents and purposes, it appears that the process of school achievement at WPHS was simply a function of enrollment and age.

Thus, although we have insufficient data to arrive at final judgements about the character of school achievement processes at the various schools, we can at least discern three distinct patterns of school achievement for the remaining schools: a meritocratic process at CHS and GHS, ascriptive achievement at SHMTS, and an indeterminate process in which nothing mattered except enrollment and age at WPHS. In effect, the process of educational achievement was not uniform across all schools--rather, it was differentiated by school. Without further data it is not possible to judge whether these different processes of school achievement exhaust the major kinds of processes of educational achievement characteristic of Philadelphia high schools, or whether there are others as well. But clearly, educational credentials at CHS and GHS meant one thing, at WPHS another, and at SHMTS yet another.

These findings point to a conclusion of some theoretical interest. All of the existing approaches to school achievement have assumed that the process of school achievement was uniform across all schools; the theories have only differed over the character of the process. What our findings suggest is that the process of school achievement across schools was not uniform--that different processes of school achievement characterized different schools. It makes little sense, therefore, to regard the various theoretical approaches to school achievement as strictly competitive: in so far as we have discerned at least three distinct processes of school achievement (and there could very well be more) in Philadelphia, at least three of the theories of school achievement are, in part, correct. They are only incorrect in so far as they assume that the same process characterized all schools. At CHS and GHS it appears that the process of school achievement was meritocratic in the manner proposed by human capital theorists and functionalist sociologists, although, given that we do not have individual level data on intelligence and conduct, the cause of variation in grade levels remains a mystery. At SHMTS the process of school achievement was both meritocratic (in that grades were closely associated with length of stay) and ascriptive (in that grades were linked to family background), and so in part supports human capital and functionalist theories, and in part, the model proposed by Bowles and Gintis. The process of school achievement at WPHS, however, does not resemble any of the models in the current literature. It was not meritocratic, nor ascriptive, since grades and length of stay were not related to each other or to any measure of family background. And since neither grades nor length of stay were associated with conduct, neither the account of school achievement provided by Bowles and Gintis or the account provided by Willis are helpful in explicating the character of the process of school achievement at WPHS. The only variable that mattered was age--students left the school when they were legally able to do so, irrespective of family background, GPA, or conduct.

These variations in the character of the process of educational achievement at the various high schools defy therefore an easy categorization in terms of currently available models. But this seems to me less important than the fact that the processes of school achievement varied across schools, and that there is a hint of evidence that these differences were systematically related to important institutional characteristics of the schools and to a variety of social-structural developments in late nineteenth and early twentieth century Philadelphia, although not to the class structure itself. There appears to be no systematic relationship between differences in the process of school achievement and the class distribution of students in the four schools for which we have data on school achievement. As the figures in Table indicate, overall, the class distributions at each of the schools are very similar. At all four schools the business/professional class were moderately overrepresented; at all four schools the lower middle class were marginally overrepresented; at all four schools the skilled working class was represented at a level approximately at parity with its distribution in the city; at all four schools the unskilled working class was strongly underrepresented. Overall, the value of Tau for each of the schools was relatively low and within 0.07 points of each other. Indeed the extreme values of Tau were for GHS and CHS, both of which had strongly meritocratic processes of school achievement.

A class analysis of the differences in the process of school achievement leads then to a dead end. An analysis that focuses, however, on differences in curriculum and function is more fruitful. Both CHS and GHS were, from 1889 and 1893 respectively, academic and selective high schools; WPHS was primarily a vocational school for girls; SHMTS was primarily a vocational high school for boys, although in 1912, the last year of our sample cohort, the school began to operate as a comprehensive high school. Both CHS and GHS were college preparatory schools, the first from 1889 and the second from 1893; WPHS and SHMTS were terminal high schools--students were expected (and most did) go straight from school into the labor market. Indeed, it is clear that given the significance of age in determining length of stay at WPHS, that WPHS was not merely vocational but custodial as well. We have a situation then in which both CHS and GHS combined a college preparatory academic curriculum with a rigorous meritocratic process of school achievement, while WPHS combined a terminal vocational high school curriculum for girls with an indeterminate (nonmeritocratic and nonascriptive) process of school achievement and as far as I can tell, SHMTS combined a terminal vocational high school for boys with an ascriptive-meritocratic process of school achievement. The relations of course might only be contingent; it is impossible to say without additional schools to analyze. But I think it is possible to at least make an argument that the relationships were not merely contingent but systematic--that differences in curriculum and function were systematically linked to differences in the process of educational achievement at the schools and to larger social-structural developments.

The key to understanding these linkages is the development of educational credentials labor market in the second half of the nineteenth century. In the introduction to this working paper I distinguished differences in years of educational achievement from differences in educational credentials, where the latter is defined in terms of the years of educational achievement and the kind-or prestige-of the school attended. Students from CHS and CMTS might complete the same number of years of schooling but yet have radically different occupational histories on leaving school. I cannot hope to give here anything like an adequate account of the development of a credentials labor market during the second half of the nineteenth century or of its further development in the early twentieth century; to do so would require a detailed exploration of the occupational histories of students from different schools and the use of credentialling criteria by employers in the hiring and promotion of employers. It is possible, however, to briefly indicate a number of the important links between the history of secondary education and the development of a credentials labor market.

We do not as yet know the details surrounding the development of a credentials labor market in Philadelphia, but it does seem that given the relative indifference of employers to educational credentials before the 1880s, and the fact that before 1855 CHS was the only public high school for boys in the city, what credentials market did exist was probably highly limited. Indeed, it seems likely that differences in years of schooling were the axis along which students were differentiated on educational grounds, and not differences in credentials; at least until the 1880s when demands for a more "practical" and a less "bookish" education were increasingly heard and the first complaints of a shortage of properly trained blue collar workers made most employers require little more than basic literacy, and many not even that. It is also unlikely that the demand for white collar workers (invariably hired as clerks) before the 1880s was a demand for a specific credential than it was for a certain number of years of schooling. Yet although the scale of the credentials market was very limited prior to the 1880s or 1890s, several educational or educational-related developments from the mid-century on were important elements for some perhaps even necessary preconditions, of the growth of a credentials labor market in Philadelphia.

The first of these developments occured in 1859 at CHS. In that year President MacQuire abolished the system of combining grades for conduct (or "character") and academic performance in the determination of a student's grades; from that date on "demerits" for improper conduct were not deducted from a student's grades for academic performance. Instead, grades were calculated purely on the basis of academic performance. From the perspective of the development of a credentials labor market the formal separation of conduct and performance was an important benchmark, for it represented the emergence of a purified measure of educational achievement as objective and as formal as differences in years of schooling, and which could, therefore, act as an educational currency should act--as a medium of exchange. In essence it represented the modernization of meritocratic ideology and the commodification (in the sense explored by Marx in his celebrated analysis of commodity fetishism in Chapter 1 of Capital, Volumn 1) of educational achievement. In separating academic performance from conduct (the separation of course was not absolute, since certain kinds of behavior were still necessary for academic success) MacQuire shifted the basis of meritocratic ideology away from the ubiquitous and amorphous prescriptive and particularistic moralism of antibellium America toward those norms identified by Parsons, Dreeben, and others as the care of modernity achievement and universalism--and created a universalistic currency of educational achievement in the credentials market. It represented the appearance, in other words, of a formal, universalistic, market based and nonascriptive medium of exchange which would serve as a means of identifying (and rewarding) individual achievement. In this sense it represented the commodification of school achievement, the triumph of the market and market-based criteria of merit over older republican and bourgesis notions of character and merit, of utility over morality, of commerce over virtue. At a more prosaic level, grade differences based upon universalistic criteria of academic performance provided employers with the kind of measure of intellectual ability and effort that added considerably to the ability of employers (collectively the demand side of the labor market) to differentiate students in a more discrete and discriminating fashion in a manner that simple differences in years of schooling did not permit.

The second significant development was the transformation of the labor process and the structure of opportunity during the second half of the nineteenth century. Three aspects of this transformation are particularly noteworthy. The first is the decline in the demand for skilled labor, the rapid growth of the demand for semi and unskilled labor as a consequence of mechanization and specializtion, and the creation of net job structures and internal labor markets that imposed ceilings on skill acquisition, promotion and mobility. (Erickson & Yancy; Laurie & Schmitz; Laurie, Hershberg, & Alter). The second was a parallel transformation of mercantile work and job structures; whereas a clerkship in the 1850s and 1860s was very often the first sign of a male-dominated relatively open skill-and opportunity-ladder, by the end of the nineteenth century this was the case. The third feature was the development, particularly after the 1870s, of segmented (by race, sex, and ethnicity) labor markets (Edwards).

The third development, (and as we shall shortly see, the fourth as well), that contributed to the growth of a credentials labor market was alteration not in the demand side of the market for educated labor but an alteration in the supply side, namely the expansion and steady conversion of many American 4 year colleges from a classical curriculum to a curriculum that stressed modern languages the sciences and a variety of slightly academic "useful" subjects, very much in the same mould provided by CHS, but with somewhat more prestige attached to their credential. David Labaree has written on this at length, and there is nothing more that I have to add at this point, other than to emphasize the significance of the colleges in expanding both the supply of (relatively) highly educated labor and in adding to the differentiation or complexity of educational credentials in the credentials market.

The fourth development that contributed to the growth of a credentials market was also a supply side phenomena--the introduction of vocational education programs into Philadelphia's schools and the opening of a series of vocational high schools, the first of which was CMTS in 1885, in response to a business demand for a more "practical" and "useful" education. During the 1870s manual training was introduced into the schools; in 1880 an Industrial Arts School was opened; sewing and cooking were adopted in the early 1880s; CMTS, as noted above, was opened in 1885; in the early 1890s the James Forten Elementary Manual Training School and the Northeast Manual Training School were established; later in the same decade commercial courses were introduced into the schools; during the first decade of the new century SHMTS, WPHSG, PTS, and WPMTHS were opened and what was left of the academic program "industrialized."

The effect of the introduction of manual training programs and the opening of CMTS in 1885 profoundly altered the market position of CHS students (graduates and nongraduates). In the same manner that the transformation of blue and white collar work and the development of new job structures and labor markets transformed the demand for educational credentials, the appearance on the scene of the new programs and the opening of CMTS transformed the supply side. Indeed, their appearance marks the beginning of a credentials labor market in which this medium of exchange was (differentiated) educational credentials. Their appearance, moreover, together with the transformation of white and blue collar labor processes and the development of new job structures radically deflated the use and exchange value of the educational credentials conferred by CHS. (For the notion of use and exchange value I am indebted to David Labaree).

To understand a little more of why this happened it is necessary to briefly review the curricula history of CHS. From the 1850s through 1889 CHS provided its students with a "useful" education that was intended to prepare students for commercial life--what Alexander Bache described as "an education preparatory to the pursuits of commerce, manufacturers, and the useful arts"--rather than a broad liberal classical education designed to prepare students for college. (Labaree, ch. 4, p. 11). They were to be "men of affairs" rather than "men of letters." The practical or useful curriculum of CHS was not, however, narrowly vocational in the way commercial or industrial courses introduced during the Progressive Era were; rather the curriculum provided CHS students with what might be called a liberal useful education focused on the sciences, math, English, history, geography, natural history, natural philosophy, moral and political science, writing, and drawing. It was, as Bache described it, a "liberal education for those intended for business life" (Ibid., p. 13). The education provided by CHS was intended not so much to aid the individual directly in the performance of his duties as to equip him with very general educational and commercial skills believed necessary for success with honor in the marketplace. CHS provided a useful education that was "useful" in the same manner that a classical education had been both superior and useful in seventeenth and eighteenth century America and England for those intending to enter the ministry, law, or medicine.

The transformation of industrial and commercial work, the growth in demand for more narrowly trained, skilled and semi-skilled workers, the expansion and modernization of higher education, and the movement into the labor market of graduates of the colleges and the new manual training programs and schools reduced, and threatened to continue to reduce, both the use and exchange value of CHS's credentials. The kind of "useful" but slightly academic skills provided by CHS were increasingly no longer required and demanded by employers. The inevitable result was a decline in the use value of Central's credentials; and as the use value of Central's credentials declined, so too their exchange (or market) value. Central's solution to this dilemma was inspired, for it decided in 1889 on a two-point proposal to jettison the now obviously redundant "useful" curriculum for a rigorous classical or academic curriculum and to add a relatively small and out-of-sight (it was taught in annex elsewhere in the city) commercial course that was accorded a distinctly second-class status. The effect of this move transformed the nature of the credentials market and the place of Central's credentials in it.

First of all, the reforms of 1889 altered the relationship between use and exchange value for credentials conferred by CHS. Prior to 1889 the use value of Central's credentials was a function of the practical or useful skills it taught, and its exchange value a function of its use values and the prestige of the school. After 1885 (with the opening of CMTS) the prestige of CHS was no longer absolute but relative--it had to compete with other schools. Furthermore, after 1889 the credentials conferred by CHS were no longer a function of use value but exchange value per se. In abandoning its useful curriculum for an academic curriculum Central decided not to compete with the new manual training schools by teaching skills but confer its relative prestige and the right of entry into colleges and universities--that is, the exchange value of Central's credentials was a function of the entitlements (or privileges) and prestige conferred upon students. In effect after 1889 the exchange capital to an education that conferred cultural capital (in Bourdieu's sense of the term).

Second, the development of vocational education and manual training programs on the one hand,, and the new academic curriculum at CHS in 1889 (and at GHS in 1893) on the other had the effect of dividing--or segmenting--the high schools credentials market. The basis of this segmentation was the distinction created by these developments between human capital and cultural capital--the value of the credentials provided by CHS was not based upon use value but exchange or market value pure and simple--yet another instance of the logic of commodification described by Marx in Chapter 1 of Capital, Volume 1. (The first, it will be recalled, was the bifurcation of academic performance and conduct as a result of the reforms of 1859). Or, to put it another way, the reforms of 1889 at CHS represented a switch from an education centered on the transmission of human capital to based on cultural capital (or, alternatively, use and exchange value). (There is little doubt that the credentials market was not merely segmented but stratified as well, however, until we have completed our analysis of the individual level data we have on occupational and income histories, we cannot confirm this). At one end of the human-cultural capital axis schools like GHS and CHS conferred pure cultural capital with low use value but high exchange (or market and hence economic or monetary) value, while at the other end schools like SHMTS and WPHS conferred human rather than cultural capital with high use value but low exchange value. It is important to recognize, however, that the distinction between human capital and cultural capital does not entail a distinction between two kinds of credentials markets, but rather a continuum within a single market organized along an axis joining human capital at one end and cultural capital at the other. This of course throws an interesting light on recent theoretical debates about school achievement, since from the perspective developed here the issue is not so much a choice between human capital and cultural capital models but rather to employ both simultaneously to analyze a unitary phenomena with a binary structure. It is my hunch, moreover, that we can accomplish this by utilizing Weber or a Weberian account (as developed by Collins or Bourdieu for example) of the stratification of "market capacities" to flush out the details of a Marxian account of the logic of commodification (or what Giddens would call class structuration) and the development of a credentials market.

The third consequence of the development of differentiated curricula and differentiated schools was the stratification of educational knowledge. In many respect this is simply a corallary, or an alternative (though, I think, a less fruitful) way of describing the segmentation of the credentials market. The principal theorist of the stratification of knowledge has been Michael Young. Young proposes a distinction between two kinds of knowledge: high status and low status. Young argues that high status knowledge is bookish, individualized, abstract and unrelated to daily experience. Low status knowledge, on the other hand, is characterized by oral presentation, group learning, concreteness and practical application (Labaree, Chapter 1). It is fairly plain to see how the development of differentiated curricula--the differentiation of school knowledge into vocational and academic or classical--can be approached as a labelling event, or series of related events, in which useful or vocational knowledge was designated low status and academic knowledge designated as high status knowledge. The critical events of this development were the creation of CMTS in 1885, the curricula reforms of 1889 at CHS, the severance of the normal school from the Girls High School, and the introduction of a rigorous academic program at GHS in 1893, and the creation of NEMTS the same year.

A further corollary to the differentiation of curricula and the segmentation of the credentials market was a parallel segmentation of what Basil Bernstein defines as an "educational code." An educational code designates the infrastructure or character of school curricula and process of knowledge transmission. Bernstein identifies two ideal types--a collection code and an integration code. A collection code is characterized by strong classification and strong framing, where the former involves sharp and distinct boundaries between subjects and the latter involves a process of knowledge transmission that is clearly differentiated from the process of knowledge transmission in the community. An integrated code, on the other hand, is characterized by weak classification and weak framing: subject matter is presented in a loose and interdisciplinary manner around some organizing theme or motif, and the differences between the process of knowledge within the school are not sharply differentiated from those in the wider community. Although Bernstein presents his account of educational codes as a theoretical exercise, he suggests that historically (in England at least) there has been a gradual shift from a collection code to an integration code as reflected in the shift from the traditional discipline--based liberal classical program of the nineteenth century and the English Grammar Schools to the contemporary comprehensive school with their vocational programs and progressive pedagogies.

The story in Philadelphia seems to be a little different. The development of manual training and later, vocational educational programs, reflects the emergence (although not a shift to) of an integration code during the 1880s and the Progressive Era. But at CHS and GHS the shift was not from a collection to an integration code but the reverse, from an integration code to a collection code. Moreover, we can be very precise in our dating of the shift: 1889 in the case of CHS, and 1893 in the case of GHS. Bernstein's distinction then appears useful in characterizing the structure of cultural transmission, but his account of the direction of change does not entirely square with developments in Philadelphia, a conclusion which underlines the salience of changing definitions of low and high status knowledge, rather than changes in educational codes in explaining historical changes.

We are now in a position to pull some of this together, and to attempt to offer an account of their dynamics, and to link these arguments to differences in the character of the process of educational achievement at the various schools we have examined. During the later part of the nineteenth century a segmented credentials market developed in Philadelphia characterized by the differentiation of human and cultural capital, the separation of use and exchange value, the bifurcation of high and low status knowledge, and the segmentation of educational codes. The effects of the development of a segmented credentials market were manifold but one in particular stands out: the transformation of the institutional character of schooling from a system of competitive contest mobility to a dual structure of sponsored mobility of some and channelling into the lower and middle levels of the labor market for others. The conferrment of cultural capital to students at GHS and CHS accorded those students privileged access to jobs and to college or university, and in so doing, as Labaree points out, "sponsored" the mobility of the students by virtue of the exchange value of the credentials conferred. The students at CMTS, PTS, NEMTS, WPHS, SHMTS, and WPMTS on the other hand did not have cultural capital conferred upon them but human capital transmitted to them, and they were not granted privileged access to superior jobs or entry into colleges and universities; rather they were channelled, by virtue of the character of their credentials into the lower and middle levels of the labor market. In effect the development of a credentials labor market altered in a fundamental way the nature of the opportunity structure in Philadelphia and its characteristic processes or mechanisms for it severely limited the ability of public education to act as its founders had wished it to act--a bourgeois institution that provided a means of social mobility through individual merit and effort. In a new and startling way public education had become a class institution, an institution that not merely rationalized, in the name of social efficiency, entry into the labor market (that is, the transition from school to work) but much more than this--the early sorting and selection of students on the basis of their "probable destinies" and thereby transforming the role of education in the system of stratification from a medium of mobility to a regulating and differentiating agency. It was a role that the founders of the public school system in the 1830s would have found not merely inexplicable but contrary to republican principles and the promise of America.

This of course raises a fundamental question: why did all this come to pass? How was it, in other words, that the People's College of 1838 and a system of individual competitive achievement and contest mobility came to be replaced by a rhetoric of vocational high schools for the many and two selective academic high schools for the few, a segmented credentials market that sponsored the mobility of some and limited the mobility of the rest, and an ideology of social efficiency? How was it that public schooling became, in Polanyi's phrase, an adjunct to the market, indeed came to constitute a special kind of market (the credentials market) itself?

There are a variety of possible answers to these questions: the efforts of arrogant and preening elites to impose an apparatus of social control upon an immigrant working class, an ever increasing demand for human capital, class conflict, bureacratic imperatives, and status group competition. But the perspective that provides the strongest leverage over the events of the late nineteenth century is a perspective that combines an account of the general character of the process of capital accumulation and a related development, the process of middle class formation. The first, rather than, social control or status group competition, provides the most parsomonious account of the development of vocational education programs, while the latter, in addition to help providing an explanation of a key aspect of the development of vocational education (the ideology of social efficiency), provides the strongest account of the transformation of CHS and GHS, in 1889 and 1893 respectively, into selective high schools. In other words, the development of vocational education was linked primarily to a crisis in the production of use values as a consequence of changes in the accumulation process, while the academization of GHS and CHS was linked primarily to a crisis in the distribution of exchange values as a consequence of developments within the credentials market.

Briefly, the development of vocational education was largely the product of the transformation of the labor process during the late nineteenth century (in particular the shift from formal to real subordination) the development of segmented labor markets, and the articulation of an ideology, the ideology of social efficiency, to justify vocationalism. The first two developments were integrally linked to the accumulation crisis of the late nineteenth century and its associated class conflicts, while the third development (the appearance of an ideology of social efficienty) was an expression of an accumulationist and managerial perspective by Progressive reformers. It might be argued, of course, that the development of a system of differentiated education was a self-serving and cynical effort by upper middle class reformers to protect the market position (i.e., the credential market) of the proprietary and middle classes from an expanding working class. One would be hard pressed to deny that this indeed was a consequence of the development of differentiated education, but by the same token, there is no evidence that this was the intention of the theoreticans and apologists of social efficiency: their preoccupation was not so much with relative exchange values as with the creation of use values.

The academization of GHS and CHS, on the other hand, had little to do with the accumulation crisis of the late nineteenth century, but a great deal to do with exchange values and the credentialling crisis created by the introduction of vocational education and the expansion of higher education. In this sense it makes sense to look at the academization of GHS and CHS as Weber might have looked at them, that is, to look at them from the perspective of status competition, but this is not sufficient. On a more general level the academization of CHS and GHS were yet additional moments in the making of the Philadelphia middle classes, a process that traces back to early nineteenth century Philadelphia and links the creation of CHS in 1838, the opening of the Normal School in 1849, and the abortive reforms at GHS in 1859-1860 with the curricula reforms at CHS in 1889 and at GHS in 1893. All of these events were moments in the making of the Philadelphia middle class, although different kinds of moments. The creation of CHS in 1838, the Normal School in 1849, and the manual training schools of the 1880s and 1890s were part of an on-going process of class formation and the development and legitimation of the institutional infrastructure of a market (or class) society committed to liberal conceptions of social mobility, equal opportunity, and political democracy. The creation of the common school system in 1834-1836 and CHS in 1838, for example, were acts of self-affirmation and identification by expanding proprietary and middle classes, an expression of liberal values of equal opportunity and contest mobility, a legitimation of a market or bourgeois society, and aspects of the development of the institutional apparatus of that society. That is, they were events linked to the development of a certain kind of class society, and in this sense can be understood to express or represent a certain kind of class politics (a notion which by no means is equivalent to a politics of social control or even class conscious class conflict).

The 1859 and 1893 reforms at GHS, and 1889 at CHS, were a different kind of event, a different kind of politics. These later events were not so much expressions of class politics as status politics, a politics preoccupied not with the institutional structure and the nature of class relations, but a politics of relative privilege or in Weber's terms, "market position," within the system. The difference might be put this way: the first set of events, those that I described as expressions of class politics, were centered on either (1) the creation of a bourgesis institution for a market society (e.g., the creation of CHS in 1838), (2) the development of a credentials labor market (e.g., MacQuire's reforms in 1859), or (3) the transformation of the school into an "adjunct" (Polanyi's phrase again) of the market economy (e.g., the introduction of vocational education in the 1880s and 1890s to enhance the production of use value). On the other hand, the second set of events, those events I described as expressions of status politics or the distribution of exchange values, centered on the segmentation of the credentials market through the production, distribution, and consumption of cultural capital. Some events--the reforms of 1889 at CHS for example--were expressions of both class and status politics, since they were concerned with both the creation of a distinctive institution of a bourgesis or class society (e.g., the creation of a credentials market) and the position of different groups within that market.

This concludes my lengthy caveat on the development of a credentials market in Philadelphia; the need now is to try to indicate something about the nature of the relationship between the development of a credentials market with the variations in the character of the process of school achievement described in the body of this working paper. Even at first glance the associations are striking: on the one hand, the two selective academic schools with a privileged position in the credentials market (indeed, they had cornered the market in cultural capital) and a strictly meritocratic process of school achievement, and on the other hand, a variety of nonselective, mainly vocational schools concerned with the production of use values or human capital and characterized by either a hybrid of meritocratic and ascriptive processes of school achievement (e.g., SHMTS) or entirely indeterminate processes which were neither ascriptive or meritocratic (e.g., WPHS). Without further data on the two schools and additional data on other schools it is impossible to judge whether the difference between SHMTS and WPHS was school-specific or gender-related. It is tempting to conclude, however, that whatever the nature of this difference, the difference between CHS and GHS, on the one hand, and the remaining schools, on the other, was not merely contingent but systematic--that the process of school achievement in Philadelphia's high schools was segmented in a manner that paralleled, and was undoubtedly linked to, the segmentation of the credentials market. At the two selective and academic high schools a highly self-conscious and publicly displayed meritocratic process of school achievement legitimated the cultural capital conferred by the two schools, for it confirmed the high status of the knowledge and skills taught there and satisfied bourgesis and liberal conceptions of social mobility, equality of opportunity and fairness. (In fact it might even been argued that the legitimation of archaic classical learning in a highly mercantile and utilitarian culture required a meritocratic process of school achievement). Moreover, since the output that counted at these two schools was the exchange value of the school's credentials--their ability, that is, to command access to a college education to or secure privileged access to high status jobs--it was of paramount importance that the schools maintain the integrity and market value of the educational currency they conferred on their students. Ensuring that the process of school achievement at the two schools was meritocratic was essential to this project. At the two vocational schools on the other hand, the absence of an uncompromised meritocratic process at SHMTS and the absence of any systematic process of school achievement at WPHS confirmed the lowly status of the practical skills taught there and symbolized the fact that their purpose was not to meritocratically transmit a superior cultural capital but to train and channel students into the lower levels of the labor market. The transmission of human capital and the production of use values did not require meritocratic processes of achievement--that was only necessary where it was required to legitimate the superordinate claims of high status knowledge and where the exchange value rather than the use value of what was taught was important. In sum, there appear to be good reasons to conclude that the relationships described in this paper between curricula structure, school achievement processes, and the development of a segmented credentials labor market were not merely but systematically related.

Working Paper No. 11

Enrollment and Achievement at Five Philadelphia Grade Schools

David Hogan

I. INTRODUCTION

This paper examines, in a brief and schematic way, the pattern of enrollment and achievement at four Philadelphia grade schools. Three of the schools were elementary or primary schools (Comegy & Wolf) one a combined grammar and primary school (The Longfellow School), and one a grammer school (Jefferson).

The schools differ in the size and timing of the samples drawn from them. For the Comegy School, a 25% sample (n=125) of the 1901 entering class was coded, and a 10% sample of each of the 1902-1910 entering classes generally (n=427). For the Longfellow School, a 25% sample (n=281) of each entering class between 1892 and 1909, excepting 1920 was drawn, and for 1900, a 100% sample (n=78). For the Wolf School, a 100% sample was drawn for each year between 1881 and 1896, and for 1900, and a 20% sample for the years 1897-1899 and 1901-1906 inclusive (n=2212). (Jefferson will be discussed later).

With the sole exception of Jefferson Grammar School, the schools are not analyzed individually but collectively, and in two parts, enrollment and achievement. Jefferson is treated separately at the end of the working paper.

The principle independent variable employed in the analysis is class. Two different class models are used: a four category model (proprietory, middle, skilled working, unskilled and semi-skilled working) for the analysis of school enrollment, and a five category model (the four category model plus a category "other") for the analysis of school performance. The four category model differs from the five category model not only in the number of categories but also in the fact that skilled workers who were masters (i.e., self-employed or employers) were not included in the business class in the four category model as they are in the five category model. In other words, the five category model, apart from being more comprehensive, is also a true class model rather than a stratification model based on occupational title as is the four category model. (For a fuller discussion see my working paper on GHS, 1901-1922). As with the analysis of school enrollments in other schools, the four category model is made necessary by the organization of U.S. census occupational data on occupation which does not differentiate masters from skilled workers. Tables 1, 2, and 3 compare the distribution of students by class within each of the schools using the four and five category class models.

II. WOLF, COMEGY, AND LONGFELLOW: SCHOOL ENROLLMENT

The analysis of school enrollments at each of the three schools involves a comparison of the occupational background of heads of households of students enrolled at each school with the occupational distribution of the city as a whole. That is, the analysis involves the use of the four category "class" model. For both Longfellow and Comegy the analysis also involves the use of the entire sample and its comparison with the most convenient census data (for Comegy the 1910 census, for Longfellow the 1900 census). For the Wolf School, however, a slightly more complex procedure was followed. The Wolf School sample covers a 26 year period from 1881 to 1906 inclusive; in order to avoid comparing the entire sample with say, the 1900 census, the sample has been divided into three separate cohorts: one for 1881-1890 (n=929), the second for 1891-1900 (n=795), and the third for 1880-1906 (n=164). The first cohort was analyzed in conjunction with 1880 U.S. census data, the second with 1900 U.S. census data, and the third with 1910 U.S. census data.

The Longfellow School was decidedly a skilled working class school, accounting for almost 60% of the students enrolled at the school. While all other groups were underrepresented, the skilled working class was overrepresented 1.55 times. At the Comegy School, students from the skilled working class were easily the largest single group, but with 39% of the schools enrollment not as nearly as dominant as at the Longfellow School. At Comegy, the middle class with 17.8% of the enrollment, was only a fraction underrepresented; the business class, with the second highest proportion of the enrollment at the school (24.1%) were nonetheless underrepresented, given the size of the unskilled working class in Philadelphia in 1910.

Enrollment at the Wolf School in the 1880s was dominated by students from the skilled working class (60.0%). Students from households headed by proprietors accounted for 23.6% of the enrollment. Students from middle and unskilled working class groups together accounted for approximately 16%. During the 1890s, however, the pattern of

Table 1

Enrollment, By Class, Comegy School

	Four Category Model		Five Category Model	
	N	%	N	%
Proprietory	77	29.3	88	15.4
Middle	74	28.2	74	12.9
Skilled Working	163	62.2	152	26.6
Unskilled Working	100	38.1	100	17.5
Other	—	—	156	27.3
Total	262	100.0	570	100.0

Table 2

Enrollment at Longfellow School, By Class

	Four Category Model		Five Category Model	
	N	%	N	%
Proprietory	34	12.9	27	8.04
Middle	17	6.4	17	5.06
Skilled Working	152	58.0	159	47.32
Unskilled Working	59	22.5	59	17.56
Other	——	——	74	22.02
Total	262	100.0		100.0

Table 3

Enrollment By Class, Wolf School

	Four Category Model		Five Category Model	
	N	%	N	%
Proprietory	433	22.3	499	22.9
Middle	110	5.6	110	5.0
Skilled Working	1119	57.8	1051	48.2
Unskilled Working	273	14.1	273	12.5
Other	——	——	244	11.2
Total	1935	100.0	2176	100.0

enrollments at Wolf altered in some of its details. The percentage of students from the skilled working and business classes dropped slightly (to 58.6% and 19.9% respectively) while the percentage of students from the unskilled working class increased almost 80% from 10.4% in the 1880s to 17.8% in 1890s.

Two points about these changes need to be stressed. First, although the percentage of students from the skilled working class declined, this decline did not precipitate a decline in the degree to which students from the unskilled working class were overrepresented. In fact, because the relative size of the skilled working class in the city as a whole also declined even more than the decline in skilled working class enrollment, the index of representativeness increased from 1.42 to 1.56. Second, the increase in the enrollment of children from the unskilled working class could very well hold the key to the dramatic explosion of school enrollments in Philadelphia described in an earlier working paper (Working Paper #   : Aggregate Statistics). If it is assumed that the increase in enrollments from the unskilled working class at Wolf was not due to a sudden increase in the proportion of unskilled working class households in the vicinity of the Wolf School, and if Wolf is at all representative of other schools in the city, then the expansion of enrollments in Philadelphia could be directly linked to the growth in the percentage of students from the unskilled working class.

In the first 6 years of the new century the pattern of enrollments changed again, although not to a form identical to the pattern of the

1880s. The percentage of students from the skilled working class continued to decline (to 50.6%), although because the relative size of the skilled working class continued to decline at a faster rate than the decline in their relative share of enrollments at Wolf, the degree to which the skilled working class was overrepresented at Wolf continued to increase. At the same time, however, the percentage of students from the unskilled working class declined from 18.4% to 15.2% although the percentage of unskilled workers in the Philadelphia labor force increased during the same period. But while the percentage of students from the skilled and unskilled working classes declined, the percentage of students from the business class increased dramatically to 28.6%, although the relative size of the business class in the city declined.

For two of the three schools--Comegy and Wolf--information on nativity of the child was available for analysis. For only one of the schools, however, the Wolf School, was nativity data useful. At the Comegy School, of the 566 students, 83 were missing information, 480 were born in America, and only 7 (1.2%) were foreign born. With such a distribution, it was impossible to generate meaningful contingency tables. Fortunately, the Wolf School is another story. Of the 2211 students for whom information was available, 1858 (84.03%) were American born and 353 (15.96%) were foreign born. When broken down by cohort no statistically significant differences distinguished the two groups: the ratio of American to foreign born was very similar for each cohort, except for the 1901-1906 cohort, in which the percentage of the foreign born increased (Table 4). When broken down by class,

Table 4

Nativity, By Cohort, Wolf School, 1881-1906

	1881-1890		1891-1900		1901-1906		% of Total
	n	%	n	%	n	%	
American	910	83.79	763	84.49	141	80.11	83.79
Foreign	176	16.21	140	15.5	35	19.89	16.21
Total	1086	100.0	903	100.0	176	100.0	100.0

N = 2165

Not significant at the .05 level.

Table 5

Nativity, By Class, Wolf School

	American Born		Foreign Born		% of Total
	n	%	n	%	
Business	440	21.76	59	17.4	22.9
Lower Middle	100	5.44	10	2.95	5.05
Skilled Working	869	47.28	182	53.69	48.28
Unskilled Working	229	12.46	44	12.98	12.54
Other	200	10.88	44	12.98	11.21
Total		100.00		100.00	100.00
n	1838		339		

C = .077

Significant at the .05 level.

however, the differences were significant, although not large (Table 5). Proportionately more American born students had fathers who were members of the business and lower middle classes than students who were foreign born; proportionately more foreign born students had fathers who were skilled or unskilled workers than American born students.

Finally, the Wolf School register also included information on the age of children when they enrolled in the school. The relationship between age at enrollment and class was not statistically significant (Table 6), although the relationship between age and nativity was: for example, whereas 56.00 of the American born students entered the school at age 6, only 34.9% of the foreign born did so (Table 7). Conversely, whereas only 4.17% of the American born students entered the school at age 10, more than double that percentage of the foreign born did. In other words, native born students entered Wolf School at a younger age than the foreign born students.

III. LONGFELLOW, COMEGY, WOLF: SCHOOL ACHIEVEMENT LENGTH OF STAY AND GRADES COMPLETED

Two data sets--those of the Comegy and Longfellow Schools--include a variable on the length of stay. In both schools over half of the schools enrollment left school before a year was up or at the end of the first year: 56.39% at Comegy, and 68.95% at Longfellow. At Longfellow a further 29.96% left the school by the end of the second grade; only 1% completed three grades. At Comegy the pattern was different after the first year, with more students staying on to complete more years of schooling--19.08% completed 2 years, 10.27% completed 3 years, and 14.26% completed 4 years.

Table 6

Age By Class, Wolf School, 1881-1906

	Proprietory	Middle	Skilled Working	Unskilled Working	Other	% of Total
4	0.0	0.0	0.10	0.0	0	0.10
5	3.93	3.77	2.52	2.33	4.60	3.07
6	51.90	50.00	54.84	51.16	50.63	53.03
7	15.21	19.81	13.86	17.44	12.97	14.79
8	12.97	13.21	9.50	9.30	14.23	10.95
9	7.82	3.77	8.43	8.91	7.53	8.02
10	5.08	5.66	5.33	5.43	3.35	5.04
11	2.08	1.89	3.00	2.71	3.35	2.74
12	1.39	1.89	1.36	1.16	2.51	1.49
13+	0.00	0.00	0.58	1.16	0.84	0.69
Total	100.00	100.00	100.00	100.00	100.00	100.00
n	447	106	1032	258	239	

N = 2082 Missing Cases = 138

C = 0.149

Not significant at .05 level

Table 7

Age by Nativity, Wolf School, 1881-1906

	American Born N	American Born %	Foreign Born N	Foreign Born %	% of Total
4	3	0.1	0	——	.14
5	62	3.49		0.88	3.07
6	1004	56.60	118	34.60	53.05
7	260	14.66	53	15.54	14.80
8	186	10.48	46	13.49	10.97
9	138	7.78	30	8.80	7.94
10	74	4.17	33	9.68	5.06
11	28	1.58	29	8.50	2.70
12	15	0.85	18	5.28	1.56
13+	5	0.28	10	2.9	0.7
Total	1774	100.00	341	100.0	100.0
Mean		6.87		8.02	

N = 2115 Missing Cases = 96

C = .278

Significant at .0001 level

At Comegy length of stay was linked in a statistically significant way with class, although not systematically according to class rank. For example, whereas 68% of students from the proprietory class left during or at the end of the first year, only 48.41% of students from the skilled working class did so; where 4.17% of students from the proprietory class completed 4 years, the comparable figure for children from the skilled working class was 19.05%. But where class was linked to length of stay at Comegy, this was not so at Longfellow, despite the fact that the number of students leaving school in the first and second year was considerably higher than it was at Comegy. It is noticeable, however, that the class distribution at the two schools is quite different. At Longfellow, the percentage of students from the proprietory class was only half the percentage that attended Comegy. Longfellow also had less than half the percentage of lower middle class students, and almost twice as many students from the skilled working class. Moreover, students from the same class in the different schools acted in quite different ways: for example, for higher proportions of students from the skilled working class (72.79%) and unskilled working class (65.45%) at Longfellow left during or at the end of the first year than at Comegy (48.41% and 58.2% respectively). The lack of a significant relationship between class and length of stay within the school need not then rule out the possibility that the class composition of the school somehow influenced the pattern of the length of attendance at the school.

Table 8

Length of Stay, By Class, Comegy School

Length	Proprietory	Middle	Skilled Working	Unskilled Working	Other	% of Total
1	68.06	50.85	48.41	58.02	58.99	56.39
2	18.06	25.42	22.22	18.52	14.39	19.08
3	9.72	15.25	10.32	12.35	7.19	10.27
4	4.17	8.47	19.05	11.11	19.42	14.26
Total	100.00	100.00	100.00	100.00	100.00	100.00
n	72	59	126	81	139	
% Of Total	15.09	12.37	26.42	16.98	29.14	
Mean	1.17	1.58	1.82	1.59	1.73	

N = 477 Missing Cases = 93

C = .210

Significant at the .05 level

At neither school was length of stay linked to sex in a statistically significant way. For example, at Longfellow 67.39% of males and 70.71% of females left during or at the end of the first year; 31.16% of males and 28.57% of females left during or at the end of the second year, and 1.45% of males and 0.71% of females left during or at the end of the third year.

One of the disadvantages of measuring school achievement by length of stay is that it fails to control for grade entered and grade left, i.e., the number of grades completed by a student. A student entering at the beginning of first grade, and who stayed a year, would have completed one (i.e., first) grade while another student who entered at the beginning of third grade and stayed a year would have also stayed only a year but would have completed three grades of schooling. In effect, length of stay was strongly influenced by patterns of social mobility. Grades completed, on the other hand, is a much more reliable measure of school achievement, for it controls for the grade at which students entered and left the particular school.

The data in Table 9, based on the Comegy School, illustrates the extent of student mobility nicely. For example, of all students who completed either 1, 2, 3, or 4 grades, at least 55% of students completing these grades were enrolled in the school for only 1 year. Again, only 18.02% of those completing 4 grades had attended for 2 years, and only 15.32% of those completing 4 grades had attended for 4 years.

When measured against students' class background, grades completed provides a useful measure of school achievement. It measures, however,

Table 9

Length of Stay, By Class, Longfellow School

	Proprietory	Middle	Skilled Working	Unskilled Working	Other	% of Total
1	50.00	73.33	72.79	65.45	68.63	68.95
2	50.00	26.67	25.00	34.55	31.37	29.96
3	0.0	0.0	2.21	0.0	0.0	1.08
Total	100.00	100.00	100.00	100.00	100.00	100.00
n	20	15	136	55	51	
Mean	.97	.80	.89	.90	.85	

N = 277 Missing Cases = 59

C = .176

Table 10

Length of Stay, By Grades Completed, Comegy School

Length of Stay	Grades Completed 1	2	3	4	% of Total
1	56.90	57.75	55.17	55.86	56.12
2	32.76	16.79	17.24	18.02	19.20
3	6.90	12.21	9.77	10.81	10.34
4	3.45	13.74	17.82	15.32	14.35
Total	100.00	100.00	100.00	100.00	100.00
% of Total	12.24	27.64	36.71	23.42	

N = 474   Missing Cases = 96

Not statistically significant at .05 level school achievement at one particular school only; it does not measure, in other words, the actual number of grades ever completed by a student, for the variable does not control for grades subsequently completed at another school. In other words, what the variable grades completed measures is school specific, so that contingency tables comparing differences by class in the number of grades completed do not measure such differences in general but only for that particular school.

Table 11 reports the number of grades completed by class at the Comegy School (a combined primary and grammar school, it will be remembered). Overall, 11.72% completed 1 grade, 27.68% 2 grades, 36.97% 3 grades, and 23.64% 4 grades. But for each grade level completed, there was considerable variation by class. For example, while, 25.00% of students from the middle class left after completing only one grade, only 6.90% of students from the unskilled working class did so. On the other hand, while 25% of students from the middle class completed four grades, 19.54% of students from the unskilled working class did so.

The pattern of results for the Wolf School are less interesting (Table 12). Wolf, it must be emphasized, was a primary and not a grammar school, so that it cannot be assumed that the number of grades completed in any way reflects the total number of grades ever completed, for undoubtedly many students went on to complete more grades at other schools. In effect, what the variable grades completed measures at Wolf is not very different from the length of stay measures at Comegy and Longfellow. All that distinguishes them is that the grades completed measure controls for repeaters, whereas the length of stay measure does not.

Table 11

Grades Completed, By Class, Comegy School

	Proprietory	Middle	Skilled Working	Unskilled Working	Other
1	16.44	25.00	9.02	6.90	9.15
2	30.14	21.67	27.07	28.74	28.87
3	27.40	28.33	35.34	44.83	42.55
4	26.03	25.00	28.57	19.54	19.72
Total	100.00	100.00	100.00	100.00	100.00
n	73	60	133	87	142

N = 495

Significant at the .05 level

The important result in Table 12 of course is that while some differences exist in the class means, the relationship between class and grades completed at Wolf was not significant. Overall, 39.64% of the students completed 1 grade, with little variation between the classes; 22.56% completed 2 grades, again with little variation between the classes; 10.81% completed 3 grades (with little variation by class), and 26.25% completed 4 grades.

But if grades completed and class were not significantly related at the Wolf School, grades completed and nativity were (Table 13). Whereas, 38.41% of American born students completed only 1 grade, almost 44% of the foreign born students left after completing 1 grade; again, whereas 27.87% of American born students completed 4 grades, less than 18% of the foreign born did.

2. Cause of Leaving

Each of the data sets includes a variable designating the cause of leaving for each student. Up to 20 different reasons were included in the register. For two of the schools these have been collapsed into five categories: transferred/moved, promoted to another school, left to go to work, illness/death, and unknown/missing. For the third school, the Wolf School, an additional category--"removed for want of success" or "dissatisfaction"--was added.

At the Longfellow School, length of stay and cause of leaving were statistically related (Table 15). On average, 72.66% of the students who left, left when promoted, but whereas 35.64% of those who left because of promotion did so at the end of their second year,

Table 12

Grades Completed, By Class, Wolf School, 1881-1906

Grades Completed	Proprietory	Middle	Skilled Working	Unskilled Working	Other	% of Total
1	37.74	36.19	40.16	38.98	44.16	39.04
2	22.51	21.90	22.16	26.77	18.18	22.56
3	10.90	13.33	10.64	10.24	10.82	10.81
4	27.96	28.57	25.70	24.02	26.84	26.25
Total	100.00	100.00	100.00	100.00	100.00	100.00
n	422	105	996	254	231	
Mean	2.36	2.34	2.22	2.19	2.20	

N = 2008 Missing Cases = 204

Not significant at the .05 level

Table 13

Grades Completed, By Nativity, Wolf School

Grades Completed	American Born N	American Born %	Foreign Born N	Foreign Born %	% of Total
1	656	38.41	146	43.98	39.31
2	384	22.48	80	24.10	22.75
3	181	10.60	43	12.95	10.98
4	476	27.87	59	17.77	26.23
Total	1697	100.00	328	100.00	100.00
Mean	2.30		2.02		

N = 2025   Missing Cases = 15

Significant at .001 level

Table 14

Mean Grades Completed and Age, By Cause of Leaving, Longfellow, Comegy, and Wolf Schools

	Transferred/ Moved	Promoted	Work	Illness/ Death	Removed	Other
Comegy .						
Length	1.35	1.42	1.90	1.71	—	2.20
Grades Completed	2.69	2.54	3.00	2.92	—	2.67
Wolf						
Grades	1.67	3.09	1.65	1.66	1.62	1.11
Age	6.90	7.00	9.57	6.90	7.01	7.04

Table 15

Length of Stay, By Cause of Leaving, Longfellow School

Length of Stay	Transferred/ Moved	Promoted	Work	Illness/ Death	Unknown	% of Total
1	86.96	62.87	—	85.71	75.00	69.06
2	13.04	35.64	—	14.29	25.00	29.86
3	0.00	1.69	—	0.00	0.00	1.08
Total	100.00	100.00	—	100.00	100.00	100.00
% of Total	8.27	72.66	—	17.63	1.44	

N = 278 Missing Cases = 59

Statistically significant at .05 level.

62.87% of those who were promoted only stayed at the school for a year. This suggests that the explanation of the very low percentage of students completing 3 years of schooling is to be found in high levels of mobility in and out of the school and not in low absolute levels of educational achievement.

But although cause of leaving and length of stay were statistically related at Longfellow, cause of leaving, like length of stay, was not statistically related to class (Table 16). In general, 8.04% of students left because they were transferred or moved by their parents, 68.75% of the students left because they were promoted out of the school, and 16.55% of the students left because of illness or death. The only students to differ from these means were those from the middle class. For these students, 23.53% (versus 8.04% for all students combined) left because they were transferred or moved by their parents, while 52.94% (versus 68.75% for all students combined) left because they were promoted.

At Comegy, cause of leaving was statistically associated with both grades completed and class. The overall percentage of those who left because they were transferred was 26.28%, but for those who completed only 1 grade, the percentage was less than 14% (Table 17). An average of 26.26% of all students were promoted to higher schools, although the percentages fluctuated widely, depending on the number of grades completed. Less than 9% of the students left school to go to work, the great majority of those leaving after completing 3 or 4 grades. Finally, an amazingly high percentage (22.42%) of all students left school

Table 16

Cause of Leaving, By Class, Longfellow School

	Proprietory	Middle	Skilled Skilled	Unskilled Working	Other	% of Total
Transferred/ Moved	7.41	23.53	6.92	6.78	8.11	8.04
Promoted	66.67	52.94	68.55	71.19	71.62	68.75
Work	—	—	—	—	—	—
Illness/ Death	11.11	11.76	16.98	16.95	18.92	16.67
Unknown	14.81	11.76	7.55	5.08	1.35	6.55
Total	100.00	100.00	100.00	100.00	100.00	100.00
n	27	17	159	59	74	

N = 336 Missing Cases = 1

Not significant at the .05 level.

Table 17

Grades Completed, By Cause of Leaving, Comegy's School

Completed	Transferred/ Moved	Promoted	Work	Illness/ Death	Unknown	% of Total
1	13.14	9.23	9.52	15.32	9.33	11.72
2	30.66	40.77	14.29	11.71	30.67	27.68
3	29.93	36.92	42.86	38.74	44.00	36.97
4	26.28	13.08	33.33	34.23	16.00	23.64
Total	100.00	100.00	100.00	100.00	100.00	100.00
% of Total	27.68	26.26	8.48	22.42	15.15	

N = 495   Missing Cases = 75

C = .28

Statistically significant at the .0001 level.

because of illness or death, a testament to the precariousness of health and life itself in the city in the late nineteenth century.

At Comegy, unlike Longfellow, class was statistically related, and strongly so, to cause of leaving, although in some surprising ways. Students from skilled and unskilled working class families were moved or were transferred more than students of other classes; students from the business class and the skilled working class were promoted more often than their fellow students; surprisingly, children from the unskilled and skilled working class left school to begin work appreciably less often than students from the business or the lower middle class; and finally, 36.50% of students from the unskilled working class left school because of illness or death, whereas the overall percentage for all students was some 12 percentage points lower. It is clear that illness and death of the young were not randomly distributed throughout the population, but related in systematic ways to the social structure.

At the Wolf School cause of leaving was related in a statistically significant way to all major independent variables. First of all, it was related to cohort. Overall, the two major reasons for leaving at Wolf were promotion (41.45%) and removal for reasons of "dissatisfaction" or "want of progress" (36.65%), but the three cohorts varied considerably from these norms. For example, whereas 42.73% of the 1881-1890 cohort left because of promotion, only 25% did so among the 1901-1906 cohort; again, whereas 41.53% of the 1881-1890 cohort left because of promotion, only 11.93% of the 1901-1906 did so. It would be

Table 18

Class, By Cause of Leaving, Comegy School

Cause	Proprietory	Middle	Skilled	Unskilled	Other	Total
Transferred/ Moved	28.41	28.37	32.89	30.00	15.38	26.32
Promoted	29.55	27.03	30.92	25.00	20.51	26.32
Work	12.50	12.16	7.24	7.00	7.69	8.77
Illness/ Death	27.27	29.73	26.32	36.50	11.54	24.56
Unknown	2.27	2.70	2.63	2.00	44.87	14.04
Total	100.00	100.00	100.00	100.00	100.00	100.00
n	88	74	152	100	156	

N = 570 C = .49

Statistically significant at .0001 level.

Table 19

Cause of Leaving, By Cohort, Wolf School

	1881-1890	1891-1900	1901-1906	% of Total
Transferred/ Moved	10.31	14.1	14.77	12.29
Promoted	42.73	43.1	25.00	41.45
Work	2.76	2.54	0.57	2.50
Illness/ Death	1.47	2.77	0.57	1.94
Removed/ Left	41.53	35.58	11.93	36.65
Unknown	1.20	1.77	47.16	5.18
Total	100.00	100.00	100.00	100.00
n	1086	902	176	

N = 2164 Missing Cases = 48

C = .50

Significant at .0001 level.

mistaken, however, to make very much out of these findings, since the very high percentage of cases in the 1901-1906 cohort for whom information on cause of leaving is missing (47.16%) severely tempers confidence in the results.

Considerably more confidence can be placed in the results reported in Table 20. Cause of leaving and grades completed were very strongly associated. The first point to notice is that the mean number of grades completed for those students who left the school because of promotion (accounting for 41.45% of all students) was far higher than the mean number of grades completed for any other reason, including those who were "removed" (accounting for 36.35% of all students). Second, the percentage of those left because of promotion increased with each grade completed, so that 87% of all those who left after completing 4 grades did so because of promotion. Third, the percentage who left because of removal declined with each grade: 59.48% of all students who left in the first grade were removed, while only 8.72% of those who left after 4 grades were removed. And finally, the percentage of students who left because of work accounted for only 2.5% of all students, although the percentage varies by grade completed. Surprisingly, the highest percentage of those who left to go to work did so after completing 1 grade (4.24%); only .75% of those who left at the end of fourth grade did so because of work.

Class, too, was related in statistically significant fashion to cause of leaving. Higher percentages of students from the skilled and unskilled working classes were transferred or moved out of the school

Table 20

Cause of Leaving, By Grades Completed, Wolf School

Cause	Grades Completed 1	2	3	4	% of Total	Mean
Transferred/ Moved	16.46	15.09	15.63	3.18	12.29	.67
Promoted	13.72	43.10	44.64	87.48	41.45	2.09
Work	4.24	1.94	3.13	0.75	2.50	0.65
Illness/ Death	3.99	0.86	0.89	0.37	1.94	0.66
Removed/ Left	59.48	39.01	35.27	8.22	36.65	0.62
Unknown	3.21	0.00	0.45	0.00	5.18	0.11
Total	100.00	100.00	100.00	100.00	100.00	
n	802	464	224	535		

N = 2025 Missing Cases = 187

C = .527

Significant at .0001 level.

than students from the proprietory or middle class; higher proportions of students from the unskilled working class left in order to go to work or because of illness or death than was true of students of all other classes (for example, only 1% of students from the proprietory class left to go to work). But apart from these results, the differences between the classes were not particularly great.

But if cause of leaving was statistically related to class, it was also related to nativity. Although equivalent percentages of American born and foreign born students left because or removal, a higher percentage of American born students left because of promotion. Conversly, a higher percentage of foreign born students left because of work--in fact, almost three times as many.

Both class and nativity were thus related in a statistically significant fashion to cause of leaving. Given that class and nativity were also related, this is hardly surprising. However, it is significant that the level of association and the value of contingency C were both much stronger for class than for nativity: the F test for class was significant at the .0001 level but only at the .01 level for nativity, and where the value of contingency C was a mere .095 for nativity, it was a respectably modest .206 for class. In all likelihood then class rather than nativity was a stronger predictor of cause of leaving.

IV. JEFFERSON GRAMMAR SCHOOL

Jefferson Grammar School was opened in 1836, the year of the official birth of the free public school system in Philadelphia. It

Table 21

Cause of Leaving, By Class, Wolf School

	Proprietory	Middle	Skilled Working	Unskilled Working	Other	% of Total
Transferred/ Moved	9.42	9.02	13.24	11.72	13.93	12.29
Promoted	49.68	41.82	40.76	42.86	36.89	41.45
Work	1.00	3.64	2.38	4.03	3.69	2.50
Illness/ Death	2.00	0.0	2.10	2.56	1.64	1.94
Removed/Left	31.46	38.18	37.52	32.97	40.98	36.65
Unknown	15.43	7.27	4.0	5.86	2.87	5.18
Total	100.00	100.00	100.00	100.00	100.00	100.00
n	499	110	1050	273	244	

N = 2176   Missing Cases = 35

C = .206

Significant at .0001 level.

Table 22

Cause of Leaving, By Nativity, Wolf School

	American Born		Foreign Born		% of Total
	N	%	N	%	
Transferred/ Moved	219	11.79	49	13.88	12.13
Promoted	771	41.52	127	35.98	40.63
Work	36	1.94	18	5.10	2.44
Illness/ Death	40	2.15	3	0.85	1.95
Removed/ Left	659	35.49	137	35.81	36.02
Unknown	132	7.11	19	5.38	6.83
Total	1857	100.00	353	100.00	100.00

N = 2210 Missing Cases = 2

C = .095

Significant at .01 level.

was located near the intersection of 5th and Poplar in a working class district of the city. It enrolled both boys and girls who had completed elementary and secondary (as it was called for most of the nineteenth century) schooling.

The Jefferson data set consists of five samples from the school's registers for each census year (with the exception of 1890) between 1850 and 1900.

(1) Enrollment

In Tables 23 and 24 the distribution of student's heads by class and occupational group respectively are reported. Both tables exclude the very large number of household heads from whom no occupational or class categorization could be made (n=858) and those for whom data on cohort was missing (n=44). Overall, exactly 50% of the data set were without information on occupation or class.

Easily the most significant aspect of the class distributions, in both tables is the overwhelming presence, and changes over time in the strength of that presence, of the children from the skilled working class. Overall, the skilled working class accounted for 46.10% of the school's enrollment, although the percentage was far from stable across time. Thus, in 1850 the percentage of enrollment accounted for by the skilled working class was 54.79%; by 1870 it had declined to 36.39%, a drop of some 15 percentage points. Between 1870 and 1900 the percentage

Jefferson School

Year	Boys	Girls	Teachers P	Teachers Asst.	Teachers' Sal. P	Teachers' Sal. Asst.	Teacher/ Pupil Ratio
1843	256	254	2	8	900	170-230	51.51
1845	242	251	2	8	450-900	170-230	48.50
1850	256	259	2	8	500-1000	180-250	51.52
1855	250	254	2	8	600-1200	250-350	50.51
1860	267	259	2	8	600-1200	240-350	53.52
1865	258	278	2	8	750-1500	340-450	52.56
1870	177	158	2	8	825-1650	360-480	35.32
1875	286	264	2	11	907-1815	483-615	41.44
1880	312	261	2	12			39.44
1885	276	228	2	11			39.38
1890	282	294	2	12			40.42
1900	454	460	1	20			46*
1905	474	514	1	21			47*
1910	483	530	1				
1915	529	505	1	22	2300-2700	700-1100	47*
1920	474	462	1	22	3300-3700		43*
1925	511	485	1	35	3920	1871**	28*
1930	568	588	1	33	4050	2275**	35*

*Supervising Principal not included

**Average

Table 23

Class, By Cohort, Jefferson, 1850-1900

Class	1850	1860	Cohort 1870	1880	1900	% of Total
Proprietory	26.03	29.68	30.32	25.91	15.87	25.39
Middle	4.11	3.87	5.85	9.09	12.17	7.35
Skilled Working	54.79	48.39	39.36	42.73	48.15	46.10
Unskilled Working	4.11	1.94	8.51	12.73	14.29	8.91
Other	10.96	16.13	15.96	9.55	9.52	12.25
Total	100.00	100.00	100.00	100.00	100.00	100.00
n	146	155	188	220	189	898
Missing Cases	168	134	124	86	346	

N = 898 Missing Cases = 902

C = .241

Significant at .0001 level.

Table 24

Occupation, By Cohort, Jefferson 1850-1900

	1850	1860	1870	1880	1900	Total
Professional	1.37	2.58	3.19	0.45	0.53	1.56
Proprietor (Goods)	18.46	19.35	19.68	14.55	7.41	15.59
Proprietor (Services)	2.74	1.94	3.72	5.91	6.35	4.34
Clerks	2.74	2.58	1.06	0.91	1.06	1.56
Other White Collar	0.68	0.0	7.19	6.36	5.82	3.56
Masters/ Manufacturers	2.74	3.87	3.72	4.55	1.59	3.34
White Collar Supervisor	0.00	0.65	1.06	0.00	0.00	0.00
Skilled Worker	54.79	47.74	38.30	42.73	48.15	45.27
Semi-Skilled Worker (Factory)	0.00	0.00	1.06	1.36	0.00	0.56
Semi-Skilled (Other)	0.68	0.00	3.19	5.00	7.41	3.56
Unskilled	3.42	0.00	1.06	1.82	1.06	1.45
Other Working Class	0.00	1.94	3.19	4.55	5.82	3.34
Government Employers	0.68	1.29	1.60	1.82	5.29	2.23
Women--Domestic	0.00	0.00	0.53	0.45	0.53	0.33
Women--Other	0.00	0.00	0.00	0.45	1.59	0.45
Agricultural/ Fisheries	0.00	0.00	0.53	0.00	0.00	0.11
Other	0.00	0.00	1.06	0.00	0.53	0.33
None	10.96	16.13	13.83	8.64	6.88	11.02
Renter, Gentlemen	0.68	1.94	0.00	0.45	0.00	0.56
Total	100.00	100.00	100.00	100.00	100.00	100.00
n	146	155	188	220	189	898

N = 898 Missing Cases = 902

C = . Statistically significant at the

of students from the skilled working class grew again, although not to the level in 1850. In part the slump between 1850 and 1870 can be explained by the increased percentage of students from the residual class, in part because of the increase in the percentage of students from the unskilled working class, and in part because of the growth in the percentage of students from the proprietory class. A glance at Table 24 indicates, moreover, that with the exception of miniscule fractions of working class supervisors in 1860 and 1870, the entire skilled working class category was composed of skilled workers, and that is the drop in their relative size between 1850 and 1870 that accounts for the slide in the percentage of the skilled working class during these two decades.

Second in significance after the skilled working class were the children of the proprietors. Overall, they accounted for 25.39% of the enrollment at Jefferson between 1850 and 1900, although like the skilled working class, the percentage fluctuated from decade to decade. Between 1850 and 1880, the percentage increased slightly, but dropped dramatically between 1870 and 1900, (simultaneous with the rebound of the skilled working class). Among the proprietory class the most numerous were the children of the proprietors of goods rather than services, accounting for well over half of all students from the proprietory class for each year with the exception of 1900, when they accounted for only 46.7%. The number of students from households headed by proprietors of services was but a fraction of those from households headed by proprietors of goods in 1850 and 1860, but after

1860 they grew in relative significance; by 1900 they were almost as numerous as the students with proprietors of goods heads. Students from professional homes and from households headed by masters or manufactors, did not constitute a significant presence at the school.

The number of students from the remaining classes were relatively small. Middle class students accounted for 7.25% of the total enrollment, with the percentage growing steadily from 4.11% in 1850 to 12.17% by 1900. Students from the unskilled working class grew from 4.11% in 1850 to 14.29% in 1900, although in 1860 their percentage dropped to 1.94%. The relative size of the residual class, finally, rose from around 11% in 1850 to approximately 16% in 1860-1870, but it declined thereafter to less than 10% by 1880 and 1900.

In general, then statistically significant changes took place in the class and occupational backgrounds of the students enrolled at Jefferson between 1850 and 1900. In particular, the percentage of students from the skilled working class oscillated considerably during the half century between 1850 and 1900, while the relative significance of students from the proprietory class dropped by almost 50% between 1860 and 1900, and the proportion of students from unskilled working class more than trippled between 1850 and 1900. Yet the importance of these changes can easily be exaggerated. First, the predominance of children from the skilled working class was never really challenged, except in 1870. And second, it is far from clear that the changes that took place between 1850 and 1900 in the pattern of enrollments at Jefferson reflected significant changes in educational behavior among the children from the families in the Jefferson area; the changes could just as easily reflect changes in the occupational and class character of the surrounding neighborhoods. Unless these changes are controlled for, it is simply not possible to make definitive assessments about changes in educational behavior, at least as measured by school enrollment. The Jefferson data set does not allow this, although in a subsequent analysis of enrollment patterns of the school, the grid system developed by PSHP will be used to examine changes in the social composition of the neighborhoods in the Jefferson area, and to examine changes in enrollment patterns in the light of these residential changes.

Apart from occupation and class, the Jefferson data set also includes information on head's nativity. Easily the largest percentage of household heads were native born--some 55.61% overall. Between 1850 and 1900 however, their relative importance was cut by more than 1/3 from 79.31% to 42.08%. The percentage of German born heads, on the other hand, increased almost fourfold, from 13.10% in 1850 to 44.93% in 1880. Thereafter it dropped to 34% by 1900. No other immigrant group provided significant percentages; however, the percentage drop in the percentage of Irish born heads between 1870 and 1900 and the sudden appearance of Russian born heads in 1900 are noticeable.

These quite sizeable changes in the ethnic composition of the Jefferson neighborhood suggest that changes in the character of the population rather than changes in educational behavior were possibly responsible for the changes in the class and occupational backgrounds of Jefferson students described earlier. The plausibility of such a conclusion is reinforced, moreover, by the statistically significant differences in the class background of the ethnic groups in the neighborhood. For example, one of the major changes in the ethnic composition of Jefferson heads was a significant decline in the proportion of U.S. born heads and a significant increase in the number of German-born heads, who were less likely to be proprietors than U.S.-born heads but more likely to be skilled workers. Again, fully 60% of the Russian-born heads whose children entered the school in considerable number in the closing years of the century were skilled workers.

There is some justification therefore for concluding that the changes described earlier in the class and occupational backgrounds of the students at Jefferson were a result in part, at least, of changes in the economic and ethinic character of the neighborhoods surrounding Jefferson rather than a result entirely of changes in the educational behavior of Jefferson-area families.

Other evidence, however, points in the opposite direction--that some of the changes in enrollment patterns were a consequence of changes in educational behavior. Between 1850 and 1870 very few children entered Jefferson below the age of 9, and indeed over the course of the two decades the mean age of entry increased by more than a year--from 11.30 years to 12.54 years, with most of the increase between 1850 and 1860. Alternatively, whereas only 44.91% of the students who entered Jefferson in 1850 were 12 or older, 20 years later, 75% of the students who entered were 12 or older. By 1900, however, the mean age at entry had dropped by more than 3 years, to 9.48, but this reflected less a

Table 25

Heads Nativity, By Cohort, 1850-1900

Place of Birth	1850	1860	1870	1880	1900	% of Total
U.S.A.	79.31	73.78	53.88	40.97	42.58	55.61
Ireland	4.14	8.54	3.88	5.73	0.99	4.56
Germany	13.10	10.98	36.89	44.93	34.16	30.08
Other U.K.	3.45	4.88	3.40	4.29	0.00	3.39
Russia	0.00	0.00	0.49	0.00	10.89	2.44
Italy	0.00	0.00	0.00	0.44	0.00	0.11
Other	0.00	1.83	1.46	2.64	11.88	3.81
Total	100.00	100.00	100.00	100.00	100.00	100.00
n	145	164	206	227	202	944

N = 944   Missing Cases = 856

C = .451

Significant at the .0001 level.

Table 26

Class, By Head's Nativity, 1850-1900

	U.S.	Ireland	Germany	Other U.K.	Russia	Italy	Other
Proprietory	28.60	24.39	20.08	30.00	20.00	0.00	18.18
Middle	9.53	0.00	4.17	0.00	20.00	0.00	18.68
Skilled Working	42.19	29.27	53.79	53.33	60.00	100.00*	36.36
Unskilled Working	7.51	17.07	11.36	6.67	0.00	0.00	18.18
Other	12.17	29.27	10.61	10.61	0.00	0.00	9.09
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00
n	493	41	264	30	25	1	33

N = 887 Missing Cases = 913

C = .258

Significant at the .0001 level.

* n = 1

Table 27

Age at Entry, By Cohort, 1850-1900

Age	1850	1860	1870	1880	1900	% of Total
5 + 6	0.00	0.00	0.00	—	23.44	8.68
7 + 8	6.67	0.35	0.33	—	14.06	6.72
9	10.53	2.13	0.33	—	4.88	4.48
10	16.14	9.57	9.21	—	19.53	14.53
11	21.75	16.67	15.13	—	16.80	17.43
12	20.00	24.11	23.36	—	12.11	18.66
13	11.58	19.50	24.67	—	5.27	13.74
14	9.47	16.67	15.45	—	1.56	9.33
15+	3.86	10.99	11.51	—	2.34	6.44
Total	100.00	100.00	100.00	—	100.00	100.00
n	285	282	304	—	512	1383
Mean Age (Years)	11.30	12.42	12.54	—	9.48	

C = .524

Significant at .0001 level.

dramatic change in educational behavior rather than the restructuring of Jefferson into a combined grammar and primary school in the late 1890s. Indeed, when the relationship between grade and age is examined controlling for cohort, 33% of the students who entered Jefferson in 1900 entered first grade (over 90% of whom were between 6 and 8), while only 54% entered fifth grade (the first grade of the grammar school) of whom 34% were 10 years old, 30% 11 years old, and 22% 12 years old.

Changes in the age of entry between 1850 and 1870 do point then to a change in educational behavior. Moreover, the changes in the age of entry were not random, but systematically linked to family background. Table 28 reports the distribution of students by age at entry by class background: a glance at the differences in the mean age at which children entered reveals that children of proprietors entered the school almost a year older than children of unskilled workers, suggesting that perhaps unskilled working class parents were more likely to utilize the school as a child-minding facility than proprietory class parents. When the relationship between class and age is examined after controlling for cohort, however, a different picture emerges (Table 29). In particular, it is apparent that the low mean age of children from unskilled working class homes is a function of the result of the restructuring of Jefferson in the late 1890s that brought into the school significant numbers of younger children, including younger children from the unskilled working class. Indeed in 1850 the mean age at entry of children from the unskilled working class was almost 2 years higher than the mean age of entry of children from the proprietory class and almost

Table 28

Age By Class, 1850-1900

	Class					
Age	Proprietory	Middle	Skilled Working	Unskilled Working	Other	% of Total
5 + 6	4.24	4.35	6.31	19.23	2.30	6.15
7 + 8	3.03	10.87	5.36	1.92	3.45	4.65
9	3.64	13.04	4.73	1.92	2.30	4.50
10	11.52	19.57	14.20	13.46	13.79	13.79
11	18.79	10.87	17.98	9.62	20.69	17.39
12	22.42	8.70	21.45	21.15	22.99	20.99
13	16.42	10.87	14.83	15.83	14.95	14.99
14	9.09	10.87	11.04	11.54	10.34	10.49
15	10.91	10.87	4.10	5.77	9.20	7.05
Total	100.00	100.00	100.00	100.00	100.00	100.00
n	165	46	317	52	87	667
Mean Age (Years)	11.77	11.07	11.29	10.90	11.80	

N = 667   Missing Cases = 1123

C = .271

Significant at .05 level.

Table 29

Class, By Mean Age at Entry, Controlling for Cohort

Class	1850	1860	1870	1880	1900	Mean Age
Proprietory	11.29	12.61	12.43	—	9.97	11.77
Middle	10.67	13.50	12.18	—	10.00	11.07
Skilled Working	11.19	12.25	12.47	—	9.58	11.29
Unskilled Working	13.00	12.33	13.31	—	8.85	10.90
Other	11.63	12.40	12.37	—	10.00	11.80
Mean Age	11.30	12.42	12.54	—	9.48	

2-1/2 years higher than children from the middle class. By 1860 these differences had disappeared, but they reappear, although in a much less extreme form, in 1870. It is also noticeable that between 1850 and 1870 the mean age of entry of students from all classes increased. When age at entry was examined with head's nativity as the independent variable, the differences between ethnic groups were statistically significant, but this seems to have been in good part a function of the unusual age distributions of children with Russian born and "other" born heads who entered the school in the late 1890s. Otherwise the spread between children of different ethnicities does not appear to be very great. When broken down by cohort, the pattern revealed in the cohort analysis of the relationship between class and age is replicated: between 1850 and 1870 the mean age of entry of students from all ethnic backgrounds increased (in the case of students with German born heads by over 2 years and those with English, Scotch, or Welsh fathers by 3 years). Analyses of changes in the mean age of entry, whether class or head's nativity is used as the independent variable, strongly suggest significant changes between 1850 and 1880 in at least this aspect of educational behavior independent of changes in the character of the neighborhood.

(2) Achievement

The Jefferson data set allows examination of two measures of school achievement: length of stay and reason for leaving. Since the overwhelming majority of students who entered Jefferson completed their

Table 30

Age, By Head's Nativity, 1850-1900

	U.S.A.	Ireland	Germany	Other U.K.	Russia	Other	% of Total
5 + 6	5.15	0.00	4.47	0.00	27.27	33.33	6.52
7 + 8	3.51	3.45	2.79	10.53	18.18	13.33	4.39
9	4.68	3.45	5.03	0.00	4.55	3.33	4.53
10	14.29	6.90	13.97	10.53	18.18	6.67	13.60
11	16.39	13.79	21.23	10.53	4.55	26.67	17.42
12	16.86	27.59	29.61	42.11	18.18	10.00	20.96
13	15.69	20.69	15.08	10.53	4.55	6.67	14.87
14	14.05	17.24	4.47	4.26	4.55	0.00	10.62
15	9.37	6.90	3.35	10.53	0.00	0.00	7.08
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00
n	427	29	179	19	22	30	706
Mean Age	11.96	12.24	11.32	11.79	9.23	10.73	

N = 706 Missing Cases = 1094

C = .393

Significant at the .01 level.

Table 31

Head's Nativity, By Mean Age at Entry, Controlling for Cohort

	1850	1860	1870	1880	1900	Mean Age
U.S.A.	11.44	12.47	12.78	—	9.37	11.68
Ireland	11.33	12.71	12.57	—	10.50	12.24
Germany	10.95	12.33	14.21	—	10.31	11.32
Other U.K.	10.00	12.00	13.00	—	—	11.79
Poland	—	—	—	—	—	—
Russia	—	—	11.00	—	9.14	9.23
Other	—	11.00	12.00	—	8.42	10.73
Mean Age	11.30	12.42	12.54	—	9.48	

formal education at the grammar school level (probably between 85% and 90%), the analysis of school achievement is considerably more meaningful than the analysis conducted for Comegy, Longfellow, and Wolf. The problem, however, does not entirely disappear, since exactly 1/4 of the students who enrolled in the school transferred out of the school without leaving any trace of their subsequent educational histories. Still, despite this problem, we can be more sanguine about the usefulness of an analysis of school achievement at Jefferson.

Overall, the mean length of stay changed significantly over time, but not in a linear fashion. In 1850 the mean length of stay was 1.59 years; by 1870 it had increased to 1.87 years, but it fell again during the subsequent decade to 1.65 in 1880 (Table 32). It rose again to the 1870 level by 1900, but in view of the altered character of Jefferson in 1900, the figure is meaningless. Given that Jefferson was a 2 year school (in 1886 it became a 4 year grammar school) these figures look impressive. But when examined from an alternative perspective they appear much less so: fully 63% (almost 2/3) of the students who enrolled in 1850 did not complete the 2 year grammar school course; by 1870 that percentage had dropped to 48.44%, but by 1880 it rose again a little over 56%

Yet as dramatic as these percentages are, they are still of limited value, for they do not control for the reasons for which students left; for example, it is quite possible that these raw percentages seriously understate the level of school achievement if a significant proportion simply transferred out of the school and enrolled elsewhere. In fact,

Table 32

Length of Stay, By Cohort, 1850-1900

Length	1850	1860	1870	1880	1900	% of Total
Less than 1	0.87	—	0.00	0.84	19.26	10.72
1	61.74	—	48.44	55.46	24.59	38.46
2	21.74	—	27.34	24.37	28.07	26.48
3	8.70	—	15.63	17.65	12.76	13.37
4	6.96	—	6.25	0.84	11.14	8.20
5	0.00	—	2.34	0.84	2.55	1.89
6	0.00	—	0.00	0.00	0.93	0.50
7	0.00	—	0.00	0.00	0.70	0.38
Total	100.00	—	100.00	100.00	100.00	100.00
n	115		128	119	431	793
Mean Length (Years)	1.59	—	1.87	1.65	1.87	

N = 794 Missing Cases = 1107

C = .391

Significant at the .0001 level.

except for 1850 (and 1900, which, given the nature of the school that year has to be ignored) relatively small percentages of students transferred out of the school (Table 33). Easily the most significant reason for leaving was work-related: 48.7% in 1850, 71.43% in 1860, 62.75% in 1870, and 81.36% in 1880. Moreover 504 out of the 508 left to enter the workforce--only 4 left to work at home. Other reasons were quite insignificant, with the sole exception of transfers in 1850 and the rather impressive but ambiguous percentage of students who were promoted to high school or graduated. About the first it might be noted that the percentage of transfers declined as the percentages leaving to enter the workforce increased, it is possible that at least some of the students who transferred or moved in 1850 in fact entered the workforce instead. And about the second, only 4 of the 38 who were in this category were promoted to high school; the remaining 34 (or 2.8% of the total number of students for whom data on cause of leaving is available) "graduated," presumably from Jefferson.

Compared to the grade schools examined in the first half of this paper then it is possible to derive relatively meaningful conclusions about school achievement at Jefferson. But the analysis needs greater refinement before it is reasonable to make supportable judgements about whether the pattern of school achievement reflected systematic changes in school achievement or was, instead, merely a reflection of changes in the neighborhood. One place to start is changes over time in the relationship between mean length of stay and reasons for leaving. (Table 34). Leaving aside the 1900 cohort, three features of Table 34

Table 33

Reason for Leaving, By Cohort, 1850-1900

Reason/ for Leaving	1850	1860	1870	1880	1900	% of Total
Transferred	21.74	10.71	13.07	4.24	40.92	24.91
Promoted to H.S.; Promoted	12.17	6.25	10.46	8.47	9.58	9.64
Work	48.70	71.43	62.75	81.36	19.96	45.49
Want of Success	0.00	4.46	2.94	0.85	17.96	9.11
Left; Removed	6.09	3.57	5.23	4.24	9.18	6.77
Illness	11.30	3.57	5.56	0.85	2.40	4.08
Total	100.00	100.00	100.00	100.00	100.00	100.00
n	115	112	306	118	501	1152

N = 1152   Missing Cases = 648

C = .484

Significant at the .0001 level.

Table 34

Reason for Leaving, By Mean Length of Stay,
Controlling for Cohort

	1850	1860	1870	1880	1900	Mean Length
Transferred	1.64	—	1.38	1.00	1.52	1.52
Promoted; Graduated	2.21	—	2.92	2.10	3.26	2.83
Work	1.49	—	1.91	1.61	2.47	1.92
Want of Success	—	—	1.67	—	1.26	1.33
Left; Removed	1.14	—	1.40	1.00	2.00	1.76
Illness	1.46	—	1.00	2.00	1.55	1.46
Mean Length	1.59	—	1.87	1.65	1.87	

are particulary noticeable: the consistently greater length of stay of the students who graduated, the jump in the mean length of stay of those leaving school to enter the workforce between 1850 and 1870 and its subsequent decline by 1880, and the persistent decline in the mean length of stay of those children who were transferred. The first suggests that for each year those students who graduated stayed more than 2 years in order to do so, while the second, in highlighting the sharp and nonlinear quality of changes in the length of stay of those who entered the workforce, suggests a possibility of a link to changing labor market conditions (see Katz on this).

Further analysis of reasons for leaving failed to turn up statistically significant relationships between it and class background. Class background was not significantly related to reason for leaving--the percentages of students from all classes leaving Jefferson to enter the labor force were all (with the exception of students from the residual class) within a few percentage points of each other. Reasons for leaving and heads nativity were statistically related, but a closer analysis reveals that the relationship is largely a function of the influence of children with Russian and Italian-born heads upon the chi-square statistics. If children with Russian-born and Italian-born heads are ignored, the patterns are fairly uniform across nativity groups, although the percentage of students with Irish and other U.K. heads leaving school to go to work was higher than the average.

In turning from reasons for leaving to length of stay, a more idiosyncratic picture emerges: changes over time in the length of

Table 35

Reason for Leaving, By Class, 1850-1900

	Proprietory	Middle	Skilled Working	Unskilled Working	Other	% of Total
Transferred	17.69	18.87	21.15	27.59	11.69	19.5
Promoted to H.S.; Graduated	10.88	13.21	8.96	6.90	6.49	9.2
Work	54.42	50.94	53.76	50.00	62.34	54.4
Want of Success	5.44	7.55	6.81	3.45	5.19	6.0
Left; Removed	6.80	5.66	5.02	10.34	9.09	6.5
Illness	4.76	3.77	4.30	1.72	5.19	4.2
Total	100.00	100.00	100.00	100.00	100.00	100.00
n	147	53	279	58	77	614

N = 614 Missing Cases = 1186

C = .15

Not significant at .05 level.

Table 36

Reason for Leaving, By Head's Nativity, 1850-1900

Reason	U.S.A.	Ireland	Germany	Other U.K.	Russia	Italy	Other	% of Total
Transferred	18.08	9.09	14.98	13.64	36.36	0.00	62.07	19.2
Promoted to H.S.; Graduated	9.04	18.18	10.14	9.09	9.09	0.00	3.45	9.4
Work	56.56	63.64	56.52	72.73	9.09	100.00	17.24	54.0
Want of Success	3.79	0.00	6.28	0.00	40.91	0.00	13.79	6.0
Left; Removed	7.00	9.09	7.73	0.00	4.55	0.00	3.45	6.8
Illness	5.54	0.00	4.35	4.55	0.00	0.00	0.00	4.4
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
n	343	22	207	22	22	1	29	646

N = 646 Missing Cases = 1154

C = .390

Significant at .0001 level.

schooling affected children from all class and nativity backgrounds, although some than others and, not always in the same direction. Thus, although children from all class backgrounds stayed at school longer in 1870 than in 1850, the increase was larger for skilled and unskilled working class children than it was for children from the proprietory and middle classes. Moreover, where the length of stay of students from proprietory households continued to grow between 1870 and 1880, mean length of stay for children of all other classes decreased, and in the case of students from the middle class and skilled working class, it dropped sharply. In effect, variations between classes in length of stay were much more pronounced than class variations in reasons for leaving. The same is true of heads nativity: while the mean length of stay increased for most groups between 1850 and 1870, it did not do so for all groups (for children with other U.K. heads, it actually fell sharply), and for those groups for whom it rose, it did not do so uniformedly across all groups (for example, it rose much more sharply for students with Irish-born heads than for students with U.S. born heads) (Table 38). Moreover, whereas the mean length of stay dropped for most groups between 1870 and 1880, for children with Irish-born heads, it rose.

The explanation of these changes is far from clear. It seems likely that they were associated with changes in labor market conditions, and perhaps to changes in the family economy. In a subsequent analysis the issue will be treated at length.

Table 37

Class, By Mean Length of Stay, Controlling for Cohort

	1850	1860	1870	1880	1900	Mean Length
Proprietory	1.71	—	1.92	2.29	1.67	1.77
Middle	1.80	—	2.20	1.46	2.09	1.89
Skilled Working	1.64	—	1.91	1.56	1.97	1.79
Unskilled Working	1.25	—	1.67	1.60	1.58	1.57
Other	1.00	—	1.58	1.45	1.59	1.48
Mean Length	1.59	—	1.87	1.65	1.87	

Table 38

Head's Nativity, By Mean Length of Stay, Controlling for Cohort

	1850	1860	1870	1880	1900	Mean Length
U.S.A.	1.57	—	1.71	1.66	2.11	1.79
Ireland	1.00	—	2.20	2.33	1.00	1.88
Germany	1.60	—	2.12	1.53	1.98	1.83
Other U.K.	2.25	—	1.50	1.88	—	1.93
Poland	—	—	—	—	—	—
Russia	—	—	1.00	—	1.05	1.05
Italy*	—	—	—	2.00	—	2.00
Other	—	—	2.00	1.00	1.35	1.82
Mean Length	1.59	—	1.87	1.65	1.87	

*n = 1

Working Paper No. 12

DATA BASE: SCHOOL AND CENSUS DATA SETS

David Hogan

I. CENSUS DATA SETS

For the project five census data sets were analyzed: 1850, 1860, 1870, 1880, and 1900. The first four were coded by the Philadelphia Social History Project (PSHP) in the early 1970's. The 1900 data set was coded by us with help from PSHP.

In sampling the 1850-1880 census manuscripts, PSHP coded 2,000 households for each of three ethnic groups (Irish, German, Native-White American) and a 100% sample of all black households in the city for each census year (see Table 1). Technically, the PSHP sampling procedure was a systematic stratified sample from a random start. For the analysis of the 1850-1880 data set the white (or ethnic) and black files were analyzed separately; within the white file each ethnic group was multiplied by the inverse of the sampling fraction and then divided by 10 to give a weighted 1/10 sample.

The 1900 data set was coded during the first year of the project. Our sample was a 1% random systematic household sample with a 10% oversample of new immigrant groups (Italians, Poles, Russians, and Austro-Hungarians) and blacks to ensure sufficiently large n's for inter-ethnic comparisons. Initially, a 1% general sample of all households from a random start was taken; subsequently, we took a separate 10% oversample of new immigrant and black households from another random start. The sampling procedure produced a file of slightly under

Table 1

Household Sampling Fractions, 1850-1880

	Sampling Fraction			
Year	Irish	German	Native-White Americans	Black
1850	1/9	1/3	1/16	100%
1860	1/14	1/7	1/22	100%
1870	1/14	1/8	1/21	100%
1880	1/15	1/10	1/33	100%
No. of Households	8000	8000	8000	

12,000 households and 49,000 individuals, or approximately 3% of the population.

Since the variables enumerated in each census were not uniform across time, Table 2 lists variables by census year.

For a variety of theoretical reasons explained in a number of the working papers, we believed it important to differentiate between skilled workers who were employees and skilled workers who were employers or masters. The census allowed us to identify skilled workers, but it did not allow us to distinguish between masters and employees. We accordingly generated printouts of all skilled workers for each cnesus year, and then checked city business directories to determine if the skilled worker was listed. If he was, he was identified as a master.

II. SCHOOL DATA SETS

Altogether, 10 data sets were coded and analyzed: Central High School, Girls High School, Central Manual Training School, Philadelphia Trades School, William Penn High School for Girls, Southern High and Manual Training School, Wolf Primary School, Comegy Primary School, Longfellow Combined Primary and Grammar School, and Jefferson Grammar School. Two other schools--Martha Washington Primary School and Penn Charter School--were coded but not analyzed. Details of each of the school data sets are outlined in Table 3, including sampling fraction, number of students coded, number successfully linked to census, percentage of sample successfully linked to census, and whether

Table 2

Variables by Census

Census Variable	1850	1860	1870	1880	1900
Address	X	X	X	X	X
Name	X	X	X	X	X
Age	X	X	X	X	X
Sex	X	X	X	X	X
Color	X	X	X	X	X
Relationship H H H				X	X
Marital Status				X	X
Occupation	X	X	X	X	X
Month Unemployed					X
Real Estate	X	X	X		
Personal Estate	X	X	X		
Type of Home					X
Mortgaged?					X
Nativity	X	X	X	X	X
Father of Foreign Birth			X		
Mother of Foreign Birth			X		
Nativity of Father				X	X
Nativity of Mother				X	X
Year of Immigration					X
Number of Years in U.S.					X
Naturalized?					X
Married Within Year?	X	X	X	X	X
Number of Years Married?					X
Mother of How Many Children?					X

Table 2--Continued

Census Variable	1850	1860	1870	1880	1900
Number of Children Still Living					X
Born Within Year					X
Attended School Within Year	X	X	X	X	X
Number of Months Within School					X
Illiteracy, those Over 20 Years	X	X			
Cannot Read			X	X	X
Cannot Write			X	X	X
Can Speak English					X
Sickness	X	X	X	X	

Table 3

Sample Fraction, N's, Census Linkage Rate: All Schools

School	% Sample Fraction	N	Number Successfully Linked to Census	% of Sample Successfully Linked to Census	Linked to City Directory
CHS					
1838-40	100	242	--	--	x
1850	100	82	61	74	x
1860	100	144	117	81	x
1870	100	127	112	88	x
1880	100	119	108	91	x
1890	50	161	--	--	x
1900	100/25*	276	238	86	x
1910	100	396	--	--	x
1920	60	400	--	--	x
Total		1,834	626	84	
*100% of graduates plus 25% of nongraduates					
GHS					
1850	100	104	69	66	x
1860	100	79	44	56	x
1870	100	235	172	73	x
1880	100	162	--	--	x
1898	100	260	173	67	x
1901-05	24	226	--	--	x
1906-10	36	342	--	--	x
1911-15	20	186	--	--	x
1916-22	20	186	--	--	x
Total		1,780			
WPHS					
1910	50	256	--	--	x
1920	50	300	--	--	x
Total		556			
SHMTS					
1910-12	50	262	--	--	x
PTS					
1916-18	25	328	--	--	x

Table 3--Continued

School	% Sample Fraction	N	Number Successfully Linked to Census	% of Sample Successfully Linked to Census	Linked to City Directory
CMTS					
1885	100	142	--	--	x
1900	100	203	--	--	x
1906	100	387	--	--	x
Total		732			
COMEGY					
1901	25	145	--	--	x
1902-10	10	427	--	--	x
WOLF					
1881	100	89	--	--	x
1882-99			--	--	x
1900	100	125	--	--	x
1901-06			--	--	x
Total					
LONGFELLOW					
1892-99	25	145	--	--	x
1900	100	78	--	--	x
1901-09	25	136	--	--	x
Total		359			
JEFFERSON					
1850	100	314	146	46	x
1860	100	289	155	54	x
1870	100	312	188	60	x
1880	100	306	220	72	x
1900	100	535	415	74	x
1910	100	423	--	--	x
Total					
1850-1900		1,756	1,124	64	
1850-1910		2,179			

linked to city directory.

Three of the school data sets were linked to the census: CHS, GHS, and Jefferson, and in all three cases for the census years 1850, 1860, 1870, 1880, and 1900. Overall, linkage rates were much better for the later years than for the earlier years, and varied by school, with CHS leading the way with an overall linkage rate of 84%. Details of the linking procedure are outlined in the appendix.

The number and nature of the variables in individual school records (or registers) varied by school. These are reported in Table 4.

Table 4

Variable by School

	GHS	CHS	William Penn	Girard	Comegys	Longfellow	George Wolf	Jefferson	SHMTS	PTS
School Attendance										
Name	X	X	X	X	X	X	X	X	X	X
Registration No.	X	X		X	X	X	X	X	X	X
Date of Admission	X	X	X	X	X	X	X	X	X	X
Grade Entered		X			X	X	X	X		
Date of Completion	X	X	X	X	X	X	X	X	X	
Length of Stay	X			X						
Previous School	X	X	X	X	X	X	X	X	X	X
Curriculum Major		X	X	X						X
Grades by course/yr.	X		X						X	X
School Graduated to	X									
Absences	X		X						X	X
Average Scholarship	X	X								
Certification	X	X		X						
Subsequent Certif.		X		X						
Conduct, Character	X		X	X						
Reasons for leaving	X	X		X	X	X	X	X		X
Subsequent career		X		X						

Table 4--Continued

	GHS	CHS	William Penn	Girard	Comegys	Longfellow	George Wolf	Jefferson	SHMTS	PTS
Age	X	X					X	X		
Occupational Aspira.		X								
Family Background										
Name of parent	X	X	X	X	X	X	X	X	X	X
Address	X	X	X	X	X	X	X	X	X	X
Occupation of father	X	X	X	X	X	X	X	X	X	X
Father's education				X						
Nativity			X	X	X	X	X	X		X
Religion				X						
Previous address	X		X							
Birthdate	X		X	X					X	X
Father's nativity			X	X						
Race			X	X						X

APPENDIX

The aim of the project's linking operation was to locate in census manuscripts students that were selected from school records and then to code information about all the members of each student's household. The ultimate product was a summary of household characteristics for each linked student. Because of the limited availability of census records, we linked only those students who entered school on or around the census years 1850, 1860, 1870, 1880, and 1900.

We achieved the highest combination of efficiency and accuracy for the years 1850-1880 by having the linking and coding done by different people with a third group checking the work at each stage. (The 1900 census required a rather different procedure, and will be explained shortly.)

The starting place for the linking process was a printout generated from student records which displayed all of the information relevant to locating a particular student in the census with each student on a separate page. The key information was student's name, father's name, and especially home address but other items were also shown--father's occupation, student's age, student number, and school code letter. For the earlier years a linker took a page of printout and found the student in the census. At the end of his search he recorded his findings on the page and moved on to another. For those he could not find, a checker gave a second more thorough search. For those that were successfully linked, coders checked to see that this was a valid link and then coded information about all members of the household. Finally a checker looked over the coding sheet and corrected errors.

The coding part of this operation was not terribly difficult. It was the linking which is most time-consuming, complex, and problematic. The most basic problem facing the linker was that the census manuscripts were not indexed. There was no sure and simple way of locating either a person or an address. The linker could not simply look in one place to find where someone is; he had to use a variety of sources in combination in order to get a fix on the places where the student might be. The first step was a printout known as a street directory. The printout was generated from the small random sample of the city's households coded by PSHP from the census manuscripts for the relevant year. Arranged alphabetically by street name, it showed the location in the census (ward, district, and page number) of every address in the coded sample. Although it was unlikely that the address sought would be shown here, it was likely that there would be an address on the same street with a nearby number. If there was, the linker recorded the location, found the appropriate book and turned to the indicated page.

It is at this point that we confronted the second basic problem of linking to the census. For the years 1850 to 1870 addresses were not recorded on the manuscript pages. Fortunately PSHP had people look up a couple of names from each page in the city directory and record the addresses. This gave the linker a general idea if he was on the right block or not; but since the large majority of households have no addresses, he had to focus his search primarily on names. The procedure was to start from the cited page and look through perhaps 10 pages on either side. If this failed, he thumbed quickly through the rest of the book looking to see whether the desired block reappears. (In 1880 and 1900, where addresses are the rule and not the exception, this process is remarkably easier.)

If this procedure failed, the linker then turned to grid squares. Developed by PSHP, the grid square system was created by placing a grid pattern over a map of the city which divides the city into a series of squares about a block and a quarter in size, each with its own X and Y coordinates. The grid square coordinates of each household in their sample for a particular year was coded along with the other information and was printed out in a street directory beside the address. The linker could thus obtain the grid square numbers from a nearby address in the street directory or failing that directly from a gridded map. Next he turned to the "grid-square dictionary" which arranges all the households in the sample by grid-square number (rather than by street name as in the directory). This told him perhaps a half dozen or more locations in the census where at least some residents of that grid square could be found and thus where he should look next. He then turned to each location and searched the immediate vacinity. If he still had no luck he checked the city directory and business directory. If a man with the same name had a different address from the one on the printout, the linker repeated his search routine with the new address.

At any stage along the way that a linker located his prey he simply noted the location on the sheet and placed it in a pile to be picked up later by a coder. If he failed to find the student, the sheet was turned over to a checker and depending on the case he would adopt one of two strategies. One was simply to retrace the steps of the linker to see if he missed something along the way. The other was to search farther afield for less likely but possibly helpful sources of information. For example, he could search through the city directory for variant spelling of the father's name or he could check the map if he suspected the grid square number from the street directory was incorrect. If the checker still failed to locate the student, the search was finally abandoned.

When a linker or checker finished with a sheet he gave it one of the following codes. The first two refer to failed links, the others refer to various kinds of successful links for which household information is coded.

N = no student, no family, no address found
A = address found but no student or family

L = student and family found in same household; normal link
S = student found but not living with family
F = family found but student not present
D = student and family found but in different households

The linking and coding procedure for 1900 cases was quite different from earlier years. The reason was that the two primary locating devices--the street directory and the grid-square dictionary--were either unusuable or unavailable. We generated a street directory from our 1900 census sample but it proved to be of little use because it was so thinly spread across the city. Moreover, the grid square procedure was unavailable because no one yet has ever gone to the considerable trouble of recording grid boundaries on the manuscript pages and keypunching the locations in order to produce a grid-square dictionary. Fortunately, linking was still possible because of two other factors: (1) enumeration districts for this year were very small (between 20 and 40 pages) thus drastically reducing the amount of searching to be done; and (2) the census bureau published an index showing the names of the streets bounding each enumeration district. In order to make the index easier to use, we marked each district's boundary along with its number on a set of large scale maps (1,000 feet to an inch). Once the maps were completed, a new form of linking and coding routine was possible. One set of people specialized in map work. Their job was to locate on the maps an address from a student's printout and record a ward and district number on the sheet. These sheets were then placed in order by district number. Next linker-coders selected from the pile a group of consecutive printout pages, which tended to be concentrated in a samll area of the city. Linking and coding were combined in 1900 cases because once a district had been identified linking itself was relatively routine. All the linker had to do was turn through 20 to 40 pages of manuscript looking for a street name and then a house number (shown for every dwelling). When he located the household he coded it himself. He then continued to link and code the remaining cases in the group he pulled from the pile.

Linker-coders apply the same link codes to these cases as in earlier years (N, A, L, F, S, or D) with two additions. Sometimes an entire block was not found, in a particular district, in which case the sheet is returned to the map crew for a new district number. At other times part or all of the household information was illegible on the hard copy manuscript pages. These were looked up by another linker-coder on microfilm, where the image was sometimes clearer. In general, one or two people were kept working on microfilm readers while most of the rest use the manuscript books, which were a little less legible but a bit more accessible and flexible. Finally, completed code sheets were checked by a supervisor, and map readers doubling as link-checkers, research one last time for the cases coded N or A.

Working Paper No. 13

Work:
Case Studies of Philadelphia Firms

Walter Licht

I. Introduction

Schools are products and agents of social and economic change. When formal educational institutions are built and why, how they are organized and by whom, who teaches, what is taught, and who become the recipients of school services, are functions of societal values and relationships, elite goals, and the imperatives of the economic order. Conversely, schools disseminate information, exercise skills, promote economic and technological growth and development, and foster occupational and social mobility.

The above statements are common to studies which attempt to place schools in context and not in isolation of broad social relations and structures. While there are vast disagreements among scholars and policy makers on the exact extent to which schools reflect upon and are reflections of larger social arrangements, all attempts at treating schools nonparochially share the object of charting relationships between schools and society. Establishing definitive connections, however, between base and superstructure, between underlying social and economic forces and educational institutions has always proved problematic. Arguments on the subject, in many instances, rest as much on inference and association as on precise and clear proof.

Members of the NIE project on the Organization of Schools, Work and Family Life in Philadelphia, 1840-1920, set as a prime objective the examination of links between schools and the economy in industrializing Philadelphia. Specifically, that represented a commitment to tracing ties between changes in the organization of work in the city and changes in the structure of schooling.

The task could be approached in three different ways. One strategy involved an intellectual history of decision making, more specifically, a measuring through the study of statements by politicians, reformers, and educators of the extent to which economic considerations and interests influenced school policy initiatives and changes. This approach is common to studies in educational history and frequently suffers from problems of inference and unwarranted generalization. Cited notables too often are embodied with greater omniscience and omnipotence than they deserve; who they represent and speak for is seldom evident and whether theories or interests are ever actually translated into practice in day-to-day situations at the level of the classroom is usually not examined or clear.

A second strategy is basically macro-economic. A detailed economic history can be assembled through the collection of statistics and other data, and shifts in economic structure can then be matched with changes in educational policy. The liabilities of inferential analysis are the greatest with this approach.

Participants in the NIE project gathered voluminous information on educational decision making and economic development in Philadelphia for the period under study. Detailed chronologies can be constructed and analyses written. Members of the project, however, on the issue of schools and the economy opted to devote fulliest time and energies to a third approach, one unique to studies in educational history. The strategy chosen was micro-economic, namely research on firms operating in Philadelphia in the last half of the nineteenth and first decades of the twentieth centuries. The object here was to watch employers (or capital) in action: to determine actual and evolving labor supply and skill needs of various businesses; to note changing problems in the management of human capital and whether the directors of the productive process deliberately or otherwise relied on formal educational institutions for solutions. A history of personnel practices in industrializing Philadelphia was deemed in order to ascertain whether schools mattered in the daily affairs of capitalist enterprises.

This report represents the results of what has always been envisioned as a unique part of the overall project, the firm studies. A brief description of the methods employed to complete these studies directly follows. Twenty firm case reports are then presented. They are followed by a computer based analysis of an unusual survey involving work histories of 2500 Philadelphia laboring people compiled by Gladys Palmer and her associates at the Industrial Research Unit of The Wharton School of the University of Pennsylvania in 1936. Original completed questionaires from the survey were discovered by project members during searches for material on Philadelphia's economic history; results of the analysis complement in important ways the findings of the firm-based studies. The report ends with concluding remarks; major findings of our investigation into connections between schools and the economy in industrializing Philadelphia are emphasized.

II. Firm Studies

During the first nine months of the project an extensive archival and library search was conducted to locate primary and secondary source materials on Philadelphia's economic history. The records of six firms were found in local archives which contained relevant information on personnel matters. Other important collections bearing on schools and the city's changing economy were also discovered, including the papers of various municipal agencies, civic reform societies and Philadelphia's Chamber of Commerce. A list prepared in 1960 of firms which had been in business in Philadelphia for more than one hundred years located in the Chamber of Commerce collection suggested the idea of contacting firms directly.

In April of 1980, a letter describing the project and our intentions was thus mailed to more than three hundred venerable Philadelphia companies asking for assistance. Forty-two firms responded immediately and positively. All were contacted by phone and on the basis of further inquiries, twenty-six were visited to establish the value and feasibility of pursuing internal research. Fourteen were eventually chosen. The quantity, quality and relevance of surviving documents and possibilities for interviewing veteran and retired workers, supervisors and owners, determined the selection.

The twenty firms designated for investigation were certainly not randomly chosen. However, they do comprise a remarkably representative sample of the diverse kinds of business enterprises that operated in Philadelphia during the last half of the nineteenth and first decades of the the twentieth centuries. In terms of size, product lines, and the skill levels and types of workers employed, they represent the gamut of Philadelphia firms. In the category of small-scale enterprises, the twenty companies include a tannery, iron foundry, stone carving concern, cutlery factory, publishing house, insurance office, and one paint and one varnish-producing manufactory; among the medium-size firms, a metal works, leatherware shop, and two textile mills; among the large enterprises, a department store, insurance office, brewery, utility company, locomotive plant, and one precision instrument and one hatmaking factory. The firms include the largest employers in Philadelphia and the smallest, white collar employers and blue, world famous concerns and companies known only locally, family-owned businesses and major corporations, a few capital goods producers and many consumer product manufacturers--all perfectly mirroring the diversified nature of Philadelphia's basically light industrial structure during the period under study.

Research in the twenty firms was then conducted over a twenty-four month period (at one point within the context of a specially designed undergraduate research seminar). During that time other company records were discovered, but a decision was made to concentrate on the original twenty. It also became clear that by relying on the Chamber of Commerce list, the project missed several important firms established after the 1860s (this, however, does not diminish from the value or representativeness of the actual cases selected for investigation).

The objective for each firm was to compile as complete a history of personnel practices as possible. Attention focused on ownership patterns, finances, market position and strategies, changes in productive techniques, trade unionism, state intervention, and most important, on evolving procedures for work force recruitment, training, discipline, compensation, promotion, benefits, and retirement. Questions on education credentialling and managerial opinion on schooling were always first in mind. Also important was the issue of change and the events or developments that forced transformations in personnel practices. Of particular interest was whether changes in procedures occured on the basis of simple economic considerations or after technological innovations (as economists might hypothesize), because of growing complexity (as organizational theorists might predict) or as the result of labor-related problems and conflict (as labor market segmentation theorists and others might argue). A detailed agenda of questions encapsulating all of the above concerns that was prepared to guide research in the twenty firms follows:

AGENDA OF QUESTIONS FOR FIRM LEVEL STUDIES

I. BASIC FIRM HISTORY

1. Date founded and why?
2. Where founded and why?
3. Founded by whom and why?
4. Form of ownership -- attention to change.
5. Growth in income, expenditures, assets, employees, etc.
6. Sources of capital.
7. Did firm grow horizontally or vertically?

II. NATURE OF PRODUCT OR SERVICE

1. What goods or services produced?
2. Change in type of goods or services produced -- when and why?
3. Sources of raw materials or parts.
4. Quality of good-- custom or standardized-- when and why change?
5. How is good basically produced or service rendered?
6. How has the basic process of production (or service rendered) changed, if at all?
7. When did changes in basic production techniques occur?
8. Why did changes in basic production techniques change?
9. What alternative technologies existed, were considered, accepted and rejected? Why?
10. Were changes basically mechanical in nature? How related to new inventions?
11. Were changes basically organizational in nature?

III. MARKET

1. Where was good or service marketed?
2. How did market change?
3. Nature of consumers of good or service.
4. When did market change?
5. Impact of competition.
6. How was product/service marketed?
7. When did firm develop special department for marketing and why?
8. Consumer interaction and impact.
9. Did firm react to or create its market?

IV. BASIC ORGANIZATION OF FIRM

1. What was administrative structure of firm?
2. Was there a single owner/manager?
3. How and why did the managerial ranks grow?

4. How were managers organized?
   By department?
   By division?
   By function?

5. When and how did hierarchies of authority emerge?

6. What were the different functions of managers?

7. Was growth horizontal or vertical in nature?

8. Can different organizational charts be drawn over time?

9. When and why did change occur?

10. Can growth in number of managers be charted over time and by function?

11. What were the changes in ratios between workers and immediate superivors?

V. PHYSICAL ENVIRONMENT

1. Location(s) and why?

2. Size of plant and growth and why?

3. Quality of physical environment and change.

4. Physical layout:
   Production area
   Relationship of offices to production area.

5. Spacing of workers.

6. Physical amenities.

7. Did possible change in location or physical layout effect work situation and how?

VI. ORGANIZATION OF LABOR FORCE

A. RECRUITMENT

1. What were the basic quantitative and qualitative labor needs of the firm and how did this change over time?

2. How diverse were the occupational needs of the firm?

3. What was the basic occupational breakdown of the work force and how did it change?

4. What was the basic geographical, sexual, ethnic, age, educational, class backgrounds of the work force? How, when and why did it change?

5. How did the socio-demographic composition of the work force change and why?

6. What was the relationship between skill levels and the socio-demographic backgrounds of the workers recruited?

**7. What formal or informal requirements were there for initial hire, and how did this change?

8. Did workers have to pay for their jobs?

**9. When did educational credentialling become important?

10. What percentage of the work force was hired full-time or part-time?

1530

11. Did firm basically hire primary or secondary market workers?

12. Did firm reach outside to hire top-echelon or primary workers or did it rely on promotional practices?

13. What was the nature of the available labor pool?

14. Was there competition for labor, and how did it change?

15. How were workers recruited, by whom, and how did this change?

16. Was all hiring in the hands of local supervisors?

17. When did recruitment become formalized and why?

18. When did personnel departments emerge to handle recruitment and why?

19. How important were family connections in recruitment?

20. Where were people recruited from?

21. Did the firm seek assistance from public or private employment agencies, or public or private schools?

B. TRAINING

1. What basic skills were needed for jobs?

2. Which workers needed to be trained?

3. How were skills learned?
   Previous formal schooling?
   Previous informal schooling?
   Formal apprenticeship? Role of union?
   Informal apprenticeship? Role of union?
   Formal on-the-job training?
   Informal on-the-job training?
   Outside agency training?
   Etc?

4. After initial training, was there further schooling?

5. Was training a pre-requisite for advancement?

6. Were there subsequent training programs for new positions?

7. How were people chosen for training, initially and for later positions?

8. Who did training?

9. Who paid for training?

10. How did training procedures change and why?

11. What impact did growth of vocational schools have?

C. JOB CLASSIFICATION

1. What were original job titles?

2. Were original job titles related to specific tasks? status in firm? tenure? etc?

3. When do distinct new titles appear? How different from old titles?

4. What was basis of new titling systems?
   For technological reasons?
   For creation of new status hierarchies?
   For changes in ownership/management?
   For new divisions of labor?

5. Did new job titles involve greater sexual or ethnic segmentation of work force?

6. What was relation of new classification titles to the allocation of rewards in the firm?

D. SUPERVISION

1. How did supervisial ranks grow in number and nature?

2. Can worker/supervisor ratios be computed over time?

3. Can you account for changes in worker/supervisor ratios?

4. Who filled managerial positions? How important was in-house promotion?

5. How would you characterize system of supervision? Simple management? Hierarchical? Bureaucratic? Other?

6. When and why were there changes in control systems?

7. What kinds of experiments were tried and why? Scientific management? Etc? How successful? Reaction? Did experiments increase turnover, unrest, etc?

8. Were there formal or informal company rules and regulations? How did workers learn rules and regulations? How detailed?

9. How were workers disciplined? By whom?

10. What were forms of discipline? Reprimands? Formal censure? Demotion? Fining? Suspension? Firing?

11. How formal were disciplinary proceedings? Were there appeal processes?

12. How did unionization change disciplinary procedures?

13. What was the nature of infractions? How pervasive were disciplinary problems? Which workers involved?

14. How tolerated were infractions?

D. REWARDS

1. What were basic pay scales, wage differentials between workers, etc?

2. How did wages in firm compare with other firms in and outside city and with other trades?

3. Did wages keep pace with changes in cost-of-living?

4. How regular was employment? How constant was income?

5. Who controlled workloads?

6. How was pay determined? Piece rates? Hourly, daily, weekly, monthly wage? Salary?

7. How often were workers paid? How paid? In cash, by check, in scrip, in kind, other?

8. Were there procedures for overtime payment? How determined? Who determined who worked overtime?

E. FRINGE BENEFITS

1. What kinds of formal fringe benefits were offered to workers?

2. When were fringe benefits begun and why?

3. Were there bonus and premium systems? When instituted and why?

4. Were there informal fringe benefits? Tips? Opportunities for pilferage, etc?

5. Were there other kinds of rewards? Placement in better physical situations, runs, rooms, etc?

F. PROMOTIONS

1. When and why did promotion become a formal process?

2. Who handled promotions?

3. What were criteria for promotions? How important were family connections? Were new positions bought and sold?

4. What percentage of work force promoted?

5. What role did unions play in development of promotional ladders?

**6. Were there distinct promotional ladders? Any dead-end ladders?

7. For middle and top echelon positions, did the company rely on in-house promotion or on outside sources? When and how institutionalized?

G. PERILS OF LABOR

1. What were hours of work and how many days in workweek?

2. When and why did hours and days worked change?

3. Did time worked vary by position in form?

4. How erratic or regular was employment?

5. What were the basic hazards of the work? Which workers most effected?

6. Can accidental injury and fatality rates be calculated over time?

7. What attempts were made to improve safety conditions? When and why initiated? How successful?

8. Who initiated safety improvements?

9. What provisions were there for aid in cases of accidental injury and death (formal or informal)?

10. When and why did formal provisions emerge for assistance in accident cases? What was the nature of the program and benefits?

11. What role did unions play in insurance provisions?
12. What provisions were made for veteran workers? Placement in less demanding positions?
13. How long did people work for the firm? Was there forced retirement?
14. When did formal pension systems emerge?
15. How sensitive was firm to hazards?
16. What provisions were made for unemployment benefits?

VII. WORKERS' CONTROL EFFORTS

1. What informal efforts were there by workers to control the production process?
2. How much control did the workers have over the pace and quality of production?
3. What kinds of informal activities did workers engage in to protest conditions? Soldiering? Refusing promotions? Working to the letter? Other class solidarity actions?
4. Did racial, sexual, ethnic and skill divisions prevent or hamper worker solidarity?

VIII. ROLE OF TRADE UNIONS

1. When is trade union organizing first mentioned in the firm?
2. Which workers involved? Number of workers involved?
3. Nature of issues raised?
4. Reaction of management?
5. When and why does a sustained trade union effort emerge?
6. Which workers inolved? Number of workers involved?
7. Nature of issues raised?
8. Reaction of management?
9. What form does union effort take? Craft or industrial?
10. Who does the organizing? Local leadership? Federation initiation?
11. Conflicts between organized groups or between organized and unorganized?
12. How is the union structured within the firm?
13. Main issues of concern? Pure bread and butter interests? Workers' control issues? Safety? Etc?
**14. What role did the union play in creating internal labor market mechanisms, in furthering bureaucratization at at the workplace?
15. What kind of formal activities did workers engage in to protest working conditions? What was frequency of strikes? How long did they generally last? How many workers actively involved? What issues inolved? Firm reactions? Results?

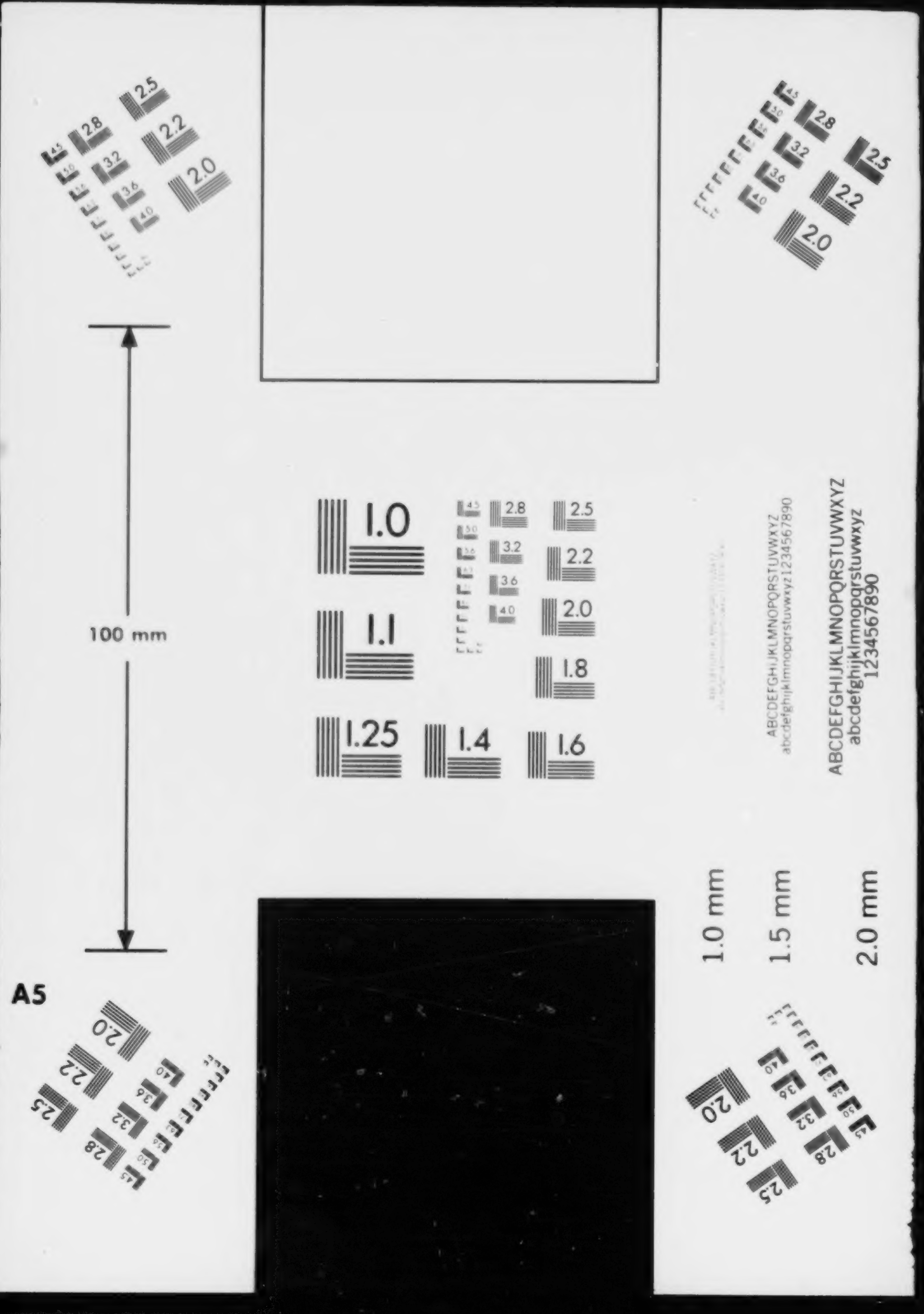
IX. ROLE OF THE STATE

1. Did the firm receive government contracts? How did this effect the work environment?
2. Did executives in the firm have any political connections and did they draw on state resources during periods of labor unrest?
3. Did the executives in the firm get involved in government agencies (e.g., the Board of Education)? or in private groups (e.g., the Chamber of Commerce)which influenced their structuring of the labor process or the economy at large?
4. Did government actions force the firm to reorganize or restructure its recruitment and promotion procedures? working conditions (hours of work? child labor, etc?)?
5. How did government taxation policies effect the structuring of the workplace?

Once research was completed in each firm a case study of personnel practices was written. The twenty case histories thus compiled follow and form the body of this report. The accounts share a common format. Brief business histories of the firms are first given; descriptions of products or services rendered and changes in production techniques follow; attention is then paid to transformations in managerial structures and to evolving practices on labor-related matters from hiring to firing; the reports end with statements emphasizing important points revealed in each case and footnotes denoting sources.

The firm studies that follow reveal to a great extent the difficulties in conducting historical research on questions concerning personnel practices. This is one area of business where firms rarely save substantive materials; one firm, for example, had an enormous and impressive internal archives, but papers on labor matters, especially for the pre-1945 period, comprised an extremely small portion of the overall holdings. Interviews proved very fruitful when the literary record was limited, but reliance on personal memories presented other problems.

No one company, in fact, provided evidence to answer even a small fraction of the questions listed in the above agenda; on the other hand, each case offered some findings of value. Taken together the twenty case histories form a composite portrait of evolving personnel practices in Philadelphia. Each case study also stands on its own, even the most limited, and for that reason they are presented separately in alphabetic rather than in a special order.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The Baldwin Locomotive Works[1]

Matthias Baldwin was born in Elizabethtown, New Jersey in 1795. After serving as a jeweler's apprentice, he became a successful jeweler in his own right and in 1825 moved to Philadelphia where he opened a business with David Mason, a machinist and wood engraver, manufacturing tools for bookbinders. Both men were inveterate tinkerers and their efforts to develop an efficient hydraulic bookpress led Baldwin to experiment with the building of a stationary steam engine. By 1830 Baldwin had severed his relationship with Mason and become an independent and major producer of steam-driven engines for industrial use.[2]

The importation of the first steam locomotives from England caught Baldwin's eye and in 1831 he built a model locomotive which was placed on display at the Philadelphia Museum (later to be the Franklin Institute of Mechanical Arts or the Franklin Institute, to which Baldwin was a charter member and an important benefactor). On the basis of his successful prototype, the Philadelphia and Germantown Railroad placed an order for a steam locomotive with his firm. In 1832 the first of more than 100,000 Baldwin engines rolled out of Baldwin's shop, the famous Old Ironsides. Other railroads began placing orders and soon Baldwin was forced to find larger quarters. In 1837 he began building a multiblock complex at Broad and Spring Garden Streets which eventually comprised 19 acres of city space. By that year, Baldwin was also one of the largest employers in the city of Philadelphia with a payroll of 300 men.[3]

To raise money for expansion Baldwin brought a succession of new partners into the firm. Upon his death in 1866, there were three principle owners of the company. Their numbers increased over the course of the century. The firm was finally incorporated as the Baldwin Locomotive Works in 1907.

Matthias Baldwin's company quickly became the largest manufacturer of steam locomotives in America. By the 1850s, sixty finished engines were being produced a year, by the 1880s, over 600, and by 1900, over 2,000. While the first Baldwin engine rolled out of the shop in 1832, the one thousandth was produced in 1861, the ten thousandth in 1889 and the fifty thousandth in 1918. Expansion in production facilities allowed for expansion in output; with little room to grow in the city, however, the firm began building a new, 616-acre complex twelve miles south of the city in Eddystone, Pennsylvania, which became fully operational in 1924 (in 1928 amid great fanfare the Philadelphia works were formally closed).[4] Expansion also come through a vast increase in the labor force at Baldwin. By the 1870s, Baldwin was the largest private employer in the city with 3,000 employees; in the mid-1920s the firm had a work force totalling 21,500, the great majority in production at Eddystone, but a substantial number also employed at facilities around the world.

Growth, however, did not change the basic way locomotive engines were constructed at Baldwin. From its inception, the firm always produced engines to order, following the specifications and needs of the large number of railroad carriers that gave business to the company (in one sense, lack of standardization in the railroad industry itself precluded a standardized product line; on the other hand, Baldwin's great claim was the ability to meet custom orders on time and Baldwin never tried to compete with manufacturers in the field that produced coarser engines). Although manufacturing on a massive scale, the firm never manufactured on a mass production basis. Skill and craft characterized the whole process.[5]

Specifications and needs were first translated into renderings and blueprints. Drawings of parts were then sent to different divisions of the plant: to the pattern shop in some instances where pattern makers made wooden models which were then sent to the foundry where they were used to make molds for iron castings; to the forge, where iron (later steel) sheets were treated and hammered into shapes (this normally involved large pieces which could not be molded); to the boiler shop where boiler makers cut copper and other metals to be made into boiler parts and assembled; or to the machine shop, tinsmith shop, tender shop, etc., were metals were cut, lathed, drilled, folded, and finished into needed components.

Once completed the various parts were then gathered in the erecting shop where skilled assemblers put the locomotives together (painters and carpenters would put on the final touches). The basic process of parts production and assemblage remained the same at Baldwin through the firm's one hundred and thirty years of locomotive manufacture in the Philadelphia area. There were obvious changes in increased mechanization, use of steam and later electrical power, adoption of mechanical lifting devices, subcontracting of some component manufacture, and in the general scale of operations--but with no loss in the skills and crafts involved.

Throughout its history, Baldwin Locomotive employed an extremely skilled work force. A job description manual prepared in 1948 included no less than 208 separate skilled positions (each with their own system of grade levels--e.g., "A," "B," or "C" grade fitter or electrician).[6] The managers of the firm also devoted time and effort to develop and maintain the skills of its work force and did little to diminish worker craft sense of control. The firm never adopted automated or conveyor-belt technologies (the custom-nature of the product precluded such initiatives); Baldwin, notably, never introduced experiments with scientific management, time and motion studies, piece rate systems, etc.;[7] the firm was also remarkably nonpaternalistic in its relations with its employees. What the company offered was prospects for training, skilled work (on a fascinating product), and good pay.

Attending to the skills of its work force was the greatest personnel problem of the firm, and the one receiving the most attention. Matthias Baldwin personally attended to the training of the men he recruited. He developed a more formal apprenticeship program once the firm moved to its expanded quarters at Broad and Spring Garden Streets. There, young men (and their parents) signed indentures which were registered with the city; they agreed to serve Baldwin for four to seven years at apprentices' wages while learning their respective trades.[8] This system remained in place during Matthias Baldwin's lifetime, but for unknown reasons went into eclipse with his immediate successors. In 1901 a new apprenticeship program was initiated by Samuel Vauclain who had risen to general superintendent of the works and would become its influential president.[9]

Vauclain established a three-tiered system. Seventeen year old boys who had completed at least eight years of schooling could apply for indentured status. They would agree to bind themselves to the company for four years, attend work regularly and receive supervision, and complete three years of night school courses in algebra, geometry and mechanical drawing (the firm did not maintain a school on the premises; recruits were expected to go to local public schools or private trade schools, the latter at Baldwin's expense). A second program existed for high school graduates who could become apprenticed for three year periods and who agreed to two years of extra school training in mechanical drawing and specifications. A third level of indenture was established for graduates of college or technical schools who wanted to secure instruction in practical shop work.

Under the three systems, recruits applied to a superintendent of apprentices who supervised their indenture and made all assignments. This in effect centralized all recruiting because the firm came to rely entirely on internal recruitment to fill their skilled needs. All apprentices were also put on rotating schedules, serving for a period in all shops and only concentrating their last year in a chosen specialty (again, this was part of deliberate company policy to enlargen rather than diminish skill levels). Upon completion, recruits were also given bonuses of $100. Baldwin experienced great success with the program. In 1909 the company reported that 85-90 percent of all accepted applicants to the program had satisfactorily completed their obligations and had been hired as full-time workers by the firm. "It is no longer necessary," the report concluded, "to go outside of the works for any talents desired."

Baldwin Locomotive maintained the above apprenticeship system until 1948 when changes were affected.[10] Applications were limited to high school graduates; the number of apprentices was regulated because of union agreements reached with various craft groups who had organized successfully in the 1930s; the tier system was dropped, but years of indenture were still tied to previous experience; and more detailed compensation schedules were established. The principle of supplemental course attendance remained a basic component of the program.

The Baldwin Locomotive Works provides a fascinating case study. It represented a mammoth industrial enterprise producing a basic capital good, but one in which skill and craft were maintained values (partly because of the nature of the product, but also because of deliberate company policy). The firm put great emphasis on training and maintaining the abilities of its workers (learning in outside institutions, however, was considered as important as on-the-job training). Loyalty could be engendered through the work itself (and the good pay). Baldwin never went in for paternalistic programs, and rarely faced unionization threats. Until 1910, when a minority of the work force joined a general strike that affected all Philadelphia firms, there is no evidence of union activity at the firm (even among machinists and molders who were well organized within the city).[11] In the 1930s various craft unions did organize and gain contracts but without great incident. The work retained meaning and importance and working for Baldwin had intrinsic as well as material rewards.

FOOTNOTES

[1] This case study is based on manuscript materials in two collections deposited at the Historical Society of Pennsylvania--The Baldwin Locomotive Works Papers and Samuel M. Vauclain Papers--and on assorted primary and secondary printed sources listed below.

[2] The early history of the firm can be found in *Memorial of Matthias Baldwin* (Philadelphia, 1867) and William Brown, *The History of the First Locomotives* (New York, 1871), pp. 231-240.

[3] Facts and figures on the Baldwin Locomotive Works can be found in *History of the Baldwin Locomotive Works, 1831-1923* (Philadelphia, no date or author listed).

[4] *The Baldwin Locomotive Works of Philadelphia: The Story of Eddystone* (Philadelphia, 1928), pp. 63-73.

[5] A good description of the manufacturing process can be found in ibid., pp. 12-62.

[6] Raghvendra Tripathi, "A Study of Labor Skills Required for Specific Production Jobs at the Baldwin Locomotive Works " (unpublished MA thesis, The Wharton School, University of Pennsylvania, 1949), pp. 19-20.

[7] Samuel Vauclain, *Optimism* (Philadelphia, 1924), pp. 45-46. This printed address was located in the files of the Vauclain Papers at the Historical Society of Pennsylvania.

[8] Apprentice Contracts, 1835-1870, Baldwin Locomotive Papers, Historical Society of Pennsylvania.

[9] The program is described in N.W. Sample, "Apprenticeship System at the Baldwin Locomotive Works, Philadelphia," The Annals of the American Academy of Political and Social Science, 33 (1909): 175-177.

[10] Tripathi, pp. 101-123.

[11] On union activity at Baldwin, see Correspondence of Samuel Vauclain, 1910-1911, Vauclain Papers, Historical Society of Pennsylvania.

THE BROWN INSTRUMENT COMPANY[1]

Edward Brown immigrated to Philadelphia in the late 1850s from his native England. In 1859 he opened a small shop on Walnut and Third Streets advertising his services as an engineer and patent attorney. In that shop Brown invented the first pyrometer of American design, an instrument to measure the heat in industrial ovens and furnaces. During his lifetime Brown developed other heat and liquid flow measuring devices, manufactured measurement equipment on a small scale basis, and served as a patent attorney for firms in the Philadelphia region. His inventions received worldwide recognition and are on display at the Smithsonian Institute today.[2]

In 1905 Edward Brown was joined by his son Richard in business under the firm name of Edward Brown & Son. Richard Brown was educated at the William Penn Charter School and later in his life, the Drexel Institute of Technology of Philadelphia. Richard assumed complete management of the company within a year of his father's death and proceeded to expand the business dramatically. In 1905, the firm carried on its operations in three rooms of an old residence; total sales that year amounted to $16,000 and the Brown work force consisted of Richard Brown and one employee.

Richard Brown first expanded by broadening the company's product line. By 1910 there were eleven employees on payroll and Brown incorporated the concern as the Brown Instrument Company. In 1911, Brown then purchased the Keystone Electrical Instrument Company of Philadelphia, a manufacturer of voltmeters and other electrical gauges. The market for industrial measuring instruments was developing rapidly and in 1914 Brown Instrument made the first of several moves to larger quarters. Increased orders and production during World War I brought total employment to approximately one hundred workers by 1918.

Richard Brown following his father's lead and with a staff of engineers continued to invent and develop new heat, liquid, gas, and electrical measuring instruments. By World War II the company manufactured some 500 different recording devices and annual sales reached $10 million (or about 20 percent of the total value of industrial measuring instruments produced in the country). The firm operated by then in a burgeoning plant which spread beyond the confines of one city block and the Brown work force increased accordingly to about 500 in 1930, 800 in 1940, 1500 in 1947 (World War II was a particularly expansive time) and 3,000 by the early 1960s.[3]

By the eve of World War II, Brown Instrument had also garnered a reputation as a manufacturer of high quality, custom instruments. The firm prospered by meeting the specifications of purchasers and perfecting a system of specialized small-batch production. The company's products were distributed throughout the world and twenty district sales and services offices were operated in the continental United States. In 1934 Brown Instrument consolidated with the Minneapolis-Honeywell Regulator Company, the giant in the field at the time, and maintained its own identity until 1949 when it became a division of Honeywell Incorporated. The merging of Brown with its Minneapolis competitor was a key event, as will be shown, in the firm's history both for the company's owners and managers as well as it work force.

As Brown Instrument expanded in size and product line during the 1920s and 1930s, Richard Brown developed a departmentalized structure of management to operate the business. Directly under his command were department heads for purchasing, manufacturing, engineering, sales and service, and accounting.[4] The largest department by far was production. Under the production manager were subdepartments for specification writing, parts manufacture, assembly (each product comprised a separate subdivision of production), finishing (a paint shop and a print shop for making dial faces were established), time and motion studies (to set job classification and payment rates), and quality control and inspection. Each product subdepartment was further divided into subassembly and secondary and final assembly areas with foremen overseeing teams of from ten to fifteen production workers.

Each part of the concern was a separate social world. The engineering department, for example, housed in a separate part of the plant was delegated responsibility for developing and testing new instruments. Before 1940, the department was staffed both by college educated engineers and a score of mechanics without formal training who for reasons of special abilities--and sometimes, their own inventions--were transferred from the shop floor (many of these men later achieved advanced degrees thought attendance at night school classes).[5] During and after World War II, an engineering degree became a prerequisite for employment in engineering and a distinct line and social division between development and production emerged (the firm traditionally has recruited heavily from Drexel Institute).[6] Attached to the engineering department was also a small model shop where prototype instruments were constructed. The shop, established by Richard Brown, became the preserve of a team of highly skilled German-born craftsmen, all of whom received technical training in Germany, and they remained fairly isolated from the rest of the work force and process.[7]

Before 1960 practically all parts used in the assemblage of Brown instruments were manufactured on the premises (this was unusual since most instrument makers contracted out parts production; to maintain quality control, Richard Brown established the practice of internal parts manufacture). The parts division of the manufacturing department thus remained until recently an important component of the business and was staffed by highly skilled pattern and toolmakers and lathe and drill press operators. These men were largely of German, British and Irish extraction, some with vocational training and many without.[8] Brown Instrument never required a high school diploma for work in manufacture and on-the-job training was emphasized. An informal apprenticeship program was established by Richard Brown (with fathers serving as masters to their sons, in many instances) which was formalized under union contract when production workers at Brown were organized by the United Electrical, Radio, and Machine Workers Union of America (UE) in 1937. The parts department served as the cite for the initial impetus toward unionization and parts employees to this day are the most militant in the plant.[9]

Assembly was a different world. Every product line comprised a separate division within the manufacturing department--each line requisitioned parts from parts production and stored them separately. The complexity of the product determined to a great extent the nature of the division of labor within each product area. Normally basic parts were assembled into small components in so-called subassembly rooms; women mostly were hired to perform these highly repetitive, unskilled tasks (or young men without particular training just out of high school or without diplomas). The components were then assembled together in various stages by more skilled workers, usually males. Final assembly represented the most complex and skilled part of the assembly process; here instruments were fitted together according to the highly technical specifications of purchasers. Final assembly workers were (and are) among the highest paid production employees at Brown; they were usually old workers who had been promoted from lower level assembly tasks (after 1937 promotion was controlled through union contract and promotion and seniority clauses). Final assemblers have also had the greatest amount of control over the pace of production, especially when complicated equipment was involved. On-the-job training of assembly workers was always a practice at Brown.[10]

The production department at Brown Instrument was also comprised of a large number of white collar workers (with secretarial and clerical people in sales and service, in fact, white collar employees at Brown represented approximately 50 percent of the work force by the end of World War II and close to 70 percent by the late 1970s; the number of production workers, it should be noted, has not diminished through either mechanization or automation, rather, non-production employment has grown). The sizable force of white collar employees in manufacture can be explained by the custom nature of Brown instruments. A large staff of salaried workers was required to write orders and specifications, supervise production, institute product line changes, monitor output, quality, job classifications and compensation, inspect final assembly, and see to shipping and billing.[11] Women with commercial high school course degrees have occupied clerical positions for the most part (the same is true in sales and service), while men promoted from assembly by and large filled spots as supervisors, production managers responsible for retooling and new production procedures, specification writers, inspectors, rate setters, etc.[12]

All non-production workers within manufacture and sales and service are salaried employees not covered by union contract (there have been repeated efforts to organize the white collar force at Brown/Honeywell but without success). As a result, promotion to white collar work is completely controlled by management; openings are announced and applications made through the personnel department. In general, in-house promotion has been favored and movement from assembly and not parts production to salaried positions most common (advancement to white collar work has presented various dilemmas to production people at Brown who have achieved significant benefits through union contract; many have chosen not to seek higher status positions and Brown/Honeywell's management has repeatedly had to institute new perquisites for its white collar staff to attract and keep people and to prevent unionization from spreading to the offices).[13]

Sexual, and to a certain extent, ethnic segmentation of the work force thus emerged at Brown and was fairly distinct through the 1950s. Women occupied subassembly spots and lower level white collar jobs. Male workers of German and Irish heritage could be found in parts production and secondary and final assembly. Generally salaried positions above the clerical level were occupied by white Anglo-Saxon Protestant males.[14] Brown Instrument apparently hired few Jews and no blacks (this changed in the 1960s).[15]

The firm also hired workers from the immediate neighborhood about the plant and the employment of family-based teams of workers was common. Before 1950 half of the employees of the company, in fact, lived within walking distance of the factory.[16] When Honeywell closed the plant in the early 1960s and moved operations to a suburban industrial park, a remarkable number of workers actually resettled outside the city to maintain employment.

Informal recruitment and training practices promoted family and neighborhood hiring patterns.[17] A small personnel office with a staff of two was established by Richard Brown after World War I (beyond expansion, the reasons for this decision are not clear).[18] The personnel department advertised for workers through newspapers and employment bureaus and accepted applications. Apparently, however, foremen and supervisors controlled final selections and through custom and nepotism local people with family members in the firm were at an advantage.[19] In 1942 a more structured and powerful personnel office was established with an initial staff of twelve.[20] This occured directly after a strike (to be discussed shortly) and led to the immediate establishment of educational credentials in the engineering department and deliberate interviewing and testing procedures for other job applicants (family and neighborhood hiring, however, remained a notable feature at the firm). The personnel office was given authority to handle recruitment and promotion, wage and salary administration, benefit programs, union negotiations (an industrial relations department established after the war eventually assumed responsibility here), publication of an employees' newspaper, and the implementation of training courses. Under the aegis of personnel, apprentice classes with union agreement were instituted for toolmakers, modelmakers and machinists; extensive training programs for inspectors, foremen, division and department heads, and salesmen were also established. Formal in-house educational services, it should be noted, were and still are a significantly more substantial matter for salaried employees than for production workers.[21] This partly is attributable to the highly technical nature of the product line at Brown; the need to encourage and elevate non-union workers at the firm has also played a role

Three other factors are important in understanding the work experience at Brown Instrument. First, Brown was a highly successful enterprise. Through the quality and variety of its products, the firm captured a significant portion of the domestic and foreign market for industrial measuring devices. Moreover, that industry was not characterized by significant price competition for customers were more interested in technical adaptability, reliability, installation and service facilities, and speed of delivery than with minor differences in price. Operating in a stable, nonseasonal and well carved out market, the company never experienced great financial difficulties or fluctuations and could and did offer regular employment to its work force (even during periods of general economic contraction).[22] Brown was known as a place to find steady work and turnover, especially above the subassembly level, was never significant or problematic.

Second, Brown specialized in custom-ordered goods. The company never operated on a mass production basis although it maintained a high volume of output. Each product was assembled to purchasers' specifications. Parts production and subassembly did involve repetitive tasks, but all attempts at automation or assembly line production failed, because of the special quality of the materials and products handled. (Honeywell, for example, recently abandoned efforts to install computer-controlled machinery in parts manufacture). Similarly, company managers always encountered great difficulty in implementing piece work and incentive pay systems based on time and motion studies because of constantly changing task requirements (union participation in the setting of rates further complicated matters).[23]

As a result of specialized product lines, Brown by and large employed a highly skilled work force which labored on single or small-batch jobs and enjoyed relative autonomy. Brown employees worked with tools and machines, but implements which were directed by hand. The production of precision, quality instruments required time and care and secondary and final assemblers in particular, had substantial control over the pace of work. The Brown Instrument Company was a deliberately managed industrial firm which operated more on a craft than an industrial regimen.[24]

Finally, unionization greatly affected the work experience at Brown. In 1937 managers of the firm agreed to recognize United Electrical as a bargaining agent for production workers. The immediate backdrop to this decision was the merger of the company with Minneapolis-Honeywell and the fears that the consolidation sparked among employees.

Richard Brown had managed the company as a typical family firm.[25] When not in his office, he either was in the engineering department or the model shop helping to develop new instruments or on the shop floor where he was on a first name basis with most employees. During the 1920s he also was a strong advocate of corporate welfare measures. He instituted a system of cumulative paid vacations and medical and life insurance programs. During the early 1930s he made every effort to keep all Brown workers on payroll at reduced wages through a work sharing plan. He took an adament stand against unions, however.

In 1934, Brown negotiated a merger agreement with Minneapolis-Honeywell and he became a director of the latter and chairman of the board of Brown Instrument which maintained its corporate identity. He soon withdrew from active management of the firm and devoted the rest of his life to civic and political affairs. Under terms of the agreement, Minneapolis-Honeywell appointed a new team of operating managers and suspended Brown's vacation and work sharing programs. Fears spread among employees that the Philadelphia plant was also to be closed.[26]

In 1936 the United Electrical, Radio, and Machine Workers Union was founded as part of the larger CIO effort to organize workers in the nation's mass production industries. UE experienced rapid success in the Philadelphia area after an effective strike was staged at the Philco Company, whose main factory was located in the same neighborhood as Brown's. Disgruntled toolmakers and machinists at the plant then invited UE organizers into the firm and union support spread rapidly. Within a few week's time upwards of 90 percent of the production staff had enrolled in the union and the firm's new managers, noting the handwriting on the wall, agreed to recognize UE as a bargaining agent before the union even formulated demands or strike plans. Over the next few years contracts were reached which restored vacations and established fixed wage and incentive payment schedules, hours standards, job classification and promotion systems, grievance procedures and seniority rights. Industrial relations at Brown since unionization have been generally peaceful. Until the late 1950s only one strike occured at the company to force a contract settlement. That was in 1941 and that strike led to the establishment of a personnel office in 1942.

The Honeywell merger, Richard Brown's withdrawal from active involvement in the management of the firm that his father had established, and union organization and recognition made relations at the Brown Instrument Company less personalistic and more formal. Lines between unionized wage workers and salaried white collar employees became especially distinct. Still loyalty to the firm remained strong. Management's willingness to deal with UE and the benefits that accrued to production workers through unionization have helped to engender fealty; but as important was Brown's strong and protected place in the industrial instrument market and the nature of the product and the work. Brown was able to offer its workers both steady employment on good terms and work which retained instrinsic interest and rewards.

FOOTNOTES

[1] The Brown Instrument Company of Philadelphia merged with the Minneapolis-Honeywell Regulator Company in 1934. In 1949 Brown became a fully subsumed division of Honeywell. In the early 1960s a new headquarters was built for that division outside of Philadelphia in an industrial park in Fort Washington, Pennsylvania. Most of the records of the old Brown Company were destroyed at the time; several boxes of papers were saved, however, and placed in a vault at the new plant. This case study is based on those assorted manuscript and printed materials and also interviews with nine former and veteran Brown employees and managers. Tapes of the interviews and short transcripts are in the possession of the author.

[2] The early history of the Brown Instrument Company can be found in "Brown, Richard Percy," entry in the National Cyclopaedia of American Biography, Volume G (1943-46), pp. 112-113; and "Edward Brown: Pacesetter," Delaware Valley Announcer, November 1959, pp. 28-29. (The above was located in deposited materials at Honeywell and copies are in the possession of author).

[3] Production and employment figures can be found in "Brown Instrument Co. and United Electrical, Radio, and Machine Workers of America (CIO)," pp. 40-41. This is a printed monographic article found in the materials deposited at Honeywell; the article contains no references or any indication of where it originally appeared (the author's name is also not given). A copy is in the possession of the author.

[4] Interviews with Carl Wagenhals (former production manager at Brown) and Jack Wiley (veteran product line manager), May 12, 1981

[5] Interviews with Charles Cusick and John Moore (former Brown engineers), May 13, 1981.

[6] Interview with James Cameron (former Brown engineer), May 13, 1981.

[7] Interview with Charles Cusick.

[8] Interview with Carl Wagenhals, Jack Wiley and Stuart Smith (veteran Brown employee and presently Director of Personnel at Honeywell), July 23, 1981.

[9] Interview with Carl Wagenhals.

[10] Interview with Jack Wiley

[11] On white collar employment in production see "Brown Instrument Co.," pp. 47.

[12] Interview with Stuart Smith and Walter Filer (former specification writer and production manager at Brown), May 13, 1981.

[13] Interview with Carol Holcombe (veteran secretary at Brown), May 13, 1981.

[14] Protestant domination in higher level positions at Brown was confirmed in all interviews. Stuart Smith of the personnel department was particularly informative.

[15] Interviews with Carl Wagenhals and Stuart Smith.

[16] "Brown Instrument Co.," p. 47.

[17] Interviews with Jack Wiley and Stuart Smith.

[18] Interview with Frank Rae (former chief of production at Brown), July 30, 1981.

[19] "Brown Instrument Co.," p. 48. Interview with Carl Wagenhals, Jack Wiley and Frank Rae.

[20] "Brown Instrument Co.," pp. 48-49.

[21] Interview with Charles Cusick.

[22] "Brown Instrument Co., pp. 46-47; interview with Jack Wiley.

[23] Interview with Carl Wagenhals and Stuart Smith.

[24] Interview with Jack Wiley.

[25] "Brown Instrument Co., p. 42.

[26] The Honeywell merger and the fears it inspired were remembered vividly by all those interviewed who worked at Brown at the time.

[27] Details on the union campaign can be found in "Brown Instrument Co.," pp. 42-43.

[28] Ibid., pp. 44-46.

Ellisco Incorporated[1]

In 1843 George D. Ellis established a metal works to manufacture tanners' and curriers' tools. Little is known about the firm's history before World War I when the company entered into the production of metal cans under government contract. In 1919 George D. Ellis & Sons was bought by Robert Taylor, who had worked on the War Industries Board administering military goods procurement programs in the Philadelphia area. The Taylor family has maintained a controlling interest in the company and a direct hand in management ever since. The name of the firm was changed to Ellisco Incorporated in 1960.

Since World War I, Ellisco has manufactured sheet metal products, largely cans and containers. In the 1920s and 1930s, large milk cans, industrial waste containers and other standarized stamped items represented the basic output of the firm. During and after World War II, Ellisco became a major producer of specialized containers for chemical and pharmaceutical processing and the handling of radioactive materials. Specialized metal containers for consumer products are also still produced by the company, but are a decreasing proportion of total sales. Ellisco has steadily increased its productive facilities and today operates in an international market.

Containers have been produced at Ellisco in the following fashion: rolled sheet metal purchased from outside suppliers has been cut into patterns and then mechanically folded and fitted into shapes. Before World War II, skilled and semi-skilled metal workers cut and pressed objects with hand controlled machinery.

Since the war, the firm has adopted automated technologies, and with the exception of extremely specialized items which require hand control, the machines are tended and watched by a work force of semi-skilled machine operatives.

In the 1920s and 1930s Ellisco annually employed between forty and fifty workers. The bulk of the work force labored in the shop and there was a small supervisory, clerical and sales group. Today the firm employs 250 people and with mechanization and automation, the great majority of employees (approximately 70 percent) actually work in the office.

Important changes in the management of the labor force at Ellisco occured between 1938 and 1945. In 1938 one clerk was assigned the task of collecting information about employees to facilitate enrollment in the Social Security system and the provision of data demanded by city, state and federal labor and industry-related governmental agencies. The work of this person increased and eventually a personnel office was established to keep records, set labor policy, and control hiring and firing; the latter functions by tradition had remained the sole prerogative of the plant superintendent who, according to the retired president of the firm, ran the shop as his personal fiefdom (apparently the owners of the firm rarely trespassed on his terrain).

The factory superintendent before 1938 personally hired and trained sheet metal workers. Neighborhood people were generally employed and family connection was important in obtaining jobs. No formal apprenticeship programs existed. When the personnel office usurped the function of hiring, minimal requirements were established for employment (shop courses but not a high school diploma was fixed as a prerequisite) and a formal probationary period created before a recruit received first grade status and wages and was eligible for fringe benefits (by the 1950s these included paid vacations, sick leave, and medical insurance).

The creation of the personnel office coincided with decisions to adopt automated processes when huge government orders came to the firm at the start of World War II. Paper work also increased with war contracts and the war witnessed a vast expansion in the clerical work force at Ellisco. Here the personnel office established more definitive criteria for hire, with a high school commercial course degree fixed as a prerequisite.

After the war the firm faced losses of government contracts and a decision was made to diversify into new consumer and industrial container products. To accomplish this end the sales force of the firm was dramatically increased; college educated veterans were preferred here. A sales training program was established (as were various sales incentive programs) which received even more attention when the company began to produce specialized containers for scientific use. At Ellisco, formal training then has been a matter of concern for the white collar component of the work force while training has been handled informally in the plant (it should be added that the managers of the company have never been threatened by unionization campaigns either in the factory or the office).

Ellisco Incorporated illustrates the impact that outside institutions, namely the state, can have on labor relations and arrangements internal to the firm. Data gathering for government agencies and government contracts forced significant changes in personnel procedures and techniques of production. Second, the firm serves as one case in which deliberate attention to labor matters affected white collar workers to a far greater extent than blue collar workers in the plant. If control of the work force in production could be exacted primarily through technical means (that is, embedded in automated processes), diligence among clerical and sales workers required bureaucratic and organizational solutions.

Footnotes

[1] This case study is based on interviews with H.K. Taylor, Chairman of the Board of Directors of Ellisco Incorporated, and Robert Taylor, his son, who serves as Vice President of the firm. Both informants studied their files after questions were submitted to them, but did not allow the author direct access to written material.

JOHN GAY & SONS CARPET COMPANY[1]

John H. Gay entered the carpet manufacturing business in 1868. In June 1876 he opened his own mill on Howard and Norris Streets in the district of Kensington, the center of Philadelphia's weaving industry. Shortly thereafter he died and the firm was entrusted to his wife and later his three sons who managed the company until its closing in March of 1915.[2]

John H. Gay & Sons produced worsted, velvet and "Tapestry Brussel" carpets. The company marketed its products throughout the East and Midwest to wholesale and large retail distributors. Although buyers came to the firm to place orders, Gay relied on a small team of directly employed traveling salesmen. The firm operated in a highly competitive market--their chief competitors were other Philadelphia carpet manufacturers, the city at the time was the leading center of carpet manufacture--and surviving company papers indicate that buyers were easily able to bargain for lower prices.[3] Keeping costs down was a daily imperative and concern for John Gay's sons.

To maintain their place in the market, the firm innovated with a number of technologies. In the 1890s, typewriters were bought deliberately to increase the efficiency of the office; in 1903, Bell Telephone service was installed. A year earlier, a sprinkler system was completed which covered all rooms in the mill.[4] Most important, the firm kept increasing the number of power looms in operation while gradually phasing out handloom production. In 1880, the firm was one of forty-four carpet companies in a city of 217 carpet manufactories that had purchased automated looms. Sixty-two power looms were in place at the time (forty-five handlooms remained) and only four other companies could boast a greater number of power looms in operation.[5]

John Gay & Sons was also a fully integrated carpet manufactory. The mill had four floors and all aspects of carpet production were maintained under one roof. Wool was cleaned and carded on the top floor, spun on the third, woven on the second, and napped, dyed, cut, and packaged on the first.[6] The Gay sons attended to purchasing, sales and other financial matters in the office (assisted by clerks and one bookkeeper), and they hired foremen to supervise each aspect of production in the plant and a general manager to oversee all operations. The firm had difficulty finding reliable supervisors and the brothers went out of their way to engender the loyalty of their supervisory staff (and salesmen) through bonus systems and special dinners.[7]

John Gay & Sons employed a diversely skilled work force (exact figures on employment cannot be determined), from highly skilled loom fixers and handloom weavers to semiskilled machine operatives and dyers to unskilled cleaners and bobbin boys. Partial lists of employees for the years 1882-1884 indicate that men and women of German extraction comprised the bulk of those employed.[8] The firm had no apprenticeship programs and hiring requirements and procedures are unclear. Since a surviving journal only mentions the Gay brothers attending to the recruitment of salesmen and supervisors, it can be assumed that the employment of non-salaried workers was left to the general manager and other supervisory personnel.

The work force at John Gay was also highly transient. Seasonal factors and fluctuating business conditions represented the two most significant causes of high turnover within the firm. Production varied over the course of the year and with severe competition in the carpet industry, the firm was extremely sensitive to swings in the market. The mill shut down normally for weeks at a time during the year and for lengthy periods during the depressions of 1884, 1893-1896 and 1907. It appears that the company did make a practice of hiring former workers back with plant re-openings. Intermittant employment and stints at the company were thus the norm.[9]

Disciplinary discharges were another cause of turnover. Firm managers handed out printed regulations to workers, and irregular production schedules made necessary the circulation of new rules regarding hours, shifts, and work loads and requirements.[10] Partial lists of employees for the years 1882-1884 include mention of disciplinary discharges (mostly for drunkenness) affecting between 5 and 10 percent of the workforce.

Accidental injuries and deaths also accounted for changes in the rolls. A number of employees are listed in firm records as dying from bronchial pneumonia.[11] Whether the illnesses were occupationally related is impossible to ascertain. Boiler explosions, chemical fires, rotting floorboards, however, took a direct toll; limbs caught in the power machinery was another frequently recorded cause of accident. The firm maintained no medical insurance or hospital plans. Veteran employees and their families appear to have received gratuities in cases of injury and death and a number of workers successfully sued the company for damages.[12]

Personal reasons were another contributing factor to high labor turnover. Workers left "to go home," get married, take vacations, and accept new positions in other firms. The allegiances of carpet weavers appears to have been more to the industry and trade than to individual firms and the managers of John Gay & Sons were aware that their employees frequently moved on to work for their competitors.[13] Finally, weather conditions and other natural causes made for uncertain employment prospects at the company. Floods and blizzards closed the mill repeatedly and for especially long periods in 1898 and 1900. The destruction wreaked by a burst frozen sprinkler pipe on December 27, 1914 actually led to the liquidation and closing of the firm three months later (on that day 86,000 yards or 49 miles of carpet were ruined).[14]

The managers of John Gay & Sons did not develop special personnel policies to deal with turnover or to engender loyalty. Veteran workers received wage inducements, bonuses, vacations, and gratuities in event of accidental injuries and death in an unsystematic way (one favored employee was even pensioned).[15] The firm made a point of staying open as often and long as possible and only once is it mentioned that the mill was closed for an employee' picnic at Atlantic City. Supervisors, moreover, appear to have been recruited from the outside and there was no system of promotion.

The most notable feature about labor matters that emerges from surviving records is the extent and amount of labor unrest at the mill. There were work stoppages of one kind or another in every given year and serious strikes in 1878, 1879, 1882, 1894, 1899, 1900, 1902, 1903, 1906 and 1912. All grades of workers participated in these job actions (although the well organized and heeled loom fixers and weavers were best able to launch lengthy and ultimately successful action); strikes, for the most part, were also well maintained, and stoppages usually occured in conjunction with protests at other carpet manufactories.

Wage cuts or reductions in piece rates were the most frequent causes of strikes. Gay & Sons workers also struck to demand shorter hours and for the closing of the mill on holidays and special occasions. No mention is made of job actions over supervision, rules or fringe benefits.

The weavers at the company staged the greatest number of job actions. A Weavers' Committee at the mill presented countless petitions to management asking for wage increases or protesting announced reductions. The committee affiliated with other groups of carpet weavers in the city and a successful city-wide union was formed under the banner of the Knight of Labor in the 1880s. In 1884 a Knights-organized strike of weavers, involving John Gay employees, lasted twenty-two weeks and was the longest and largest labor protest in Philadelphia to that date.[16]

Intense competition in the carpet industry and constant efforts to cut costs were the major sources of industrial conflict at John Gay and the city at large. As carpet workers throughout Philadelphia began to organize, so did employers in the trade both to undo competition among themselves and blunt labor unrest. By the early 1880s a successful trade association of carpet mill owners operated in the city which attempted to establish standard prices as a common front against their buyers and also common wages schedules for their workers. During the strike of 1884, the manufacturers acted in concert and dealt with Knights' officials, agreeing to create city-wide arbitration procedures for the industry. The owners of John Gay & Sons participated in these negotiations.[17] The subsequent history of both associationism and trade unionism at the company and in the carpet industry in general, however, was rather uneven.

Two findings about labor relations at John Gay deserve emphasis. Workers at the mill never developed an allegiance to the firm. The managers of the company actually did little to encourage greater loyalty (other, more substantial carpet works, such as the firm of Joseph Bromley, did adopt more paternalistic strategies). Whatever loyalty the carpet weavers at John Gay had was to themselves, their work and trade, and the community of Kensington mill people with whom they lived and labored. John Gay & Sons also offers an example of a firm in a highly competitive industry, a firm where cost cutting and particularly the cutting of labor costs, was a daily imperative and reality, and the work experience there was affected accordingly.

FOOTNOTES

[1] This case study is based primarily on a Journal of Daily Occurences of the John Gay & Sons Carpet Mills, 1876-1916, deposited at the Historical Society of Pennsylvania. The journal is the only surviving document on the firm.

[2] Journal of Daily Occurences, John Gay & Sons Carpet Mills, 1876-1916, Historical Society of Pennsylvania, July 31, 1876.

[3] Ibid., January 18, 1877; January 29, 1877; June 14, 1877; January 6, 1892; November 28, 1892.

[4] Ibid., January 7, 1893; January 25, 1902, January 22, 1903.

[5] Lorin Blodget, The Textile Industries of Philadelphia (Philadelphia, 1880), pp 45-50.

[6] Journal, June 30, 1892.

[7] Ibid., December 3, 1878; December 10, 1878; December 18, 1880; June 22, 1882; April 22, 1885; May 3, 1893.

[8] Ibid., July 1, 1882; January 17, 1883; February 21, 1884.

[9] Ibid., June 12, 1892; March 10, 1896.

[10] Ibid., November 5, 1878; August 19, 1881; March 31, 1884; March 29, 1889; May 14, 1906; September 3, 1908.

[11] Ibid., November 9, 1909; March 29, 1915.

[12] Ibid., April 8, 1891; April 6, 1894.

[13] Ibid., June 1, 1881.

[14] Ibid., December 27, 1914.

[15] Ibid., June 30, 1916.

[16] Ibid., November 20, 1884.

[17] *Philadelphia Press*, April 18, 1885, p. 1.

Herder's Cutlery, Incorporated[1]

Leopold Herder immigrated to America in 1847 and shortly thereafter founded a cutlery factory where custom knives and scissors were manufactured and sold. In his native Germany, Herder had attended trade school and finished a formal apprentice and journeymanship before he received his papers as a Messerschmidt or master knife maker.

The Herder factory was a three story building. Manufacturing took place on the top two and the bottom served as a retail outlet. Eventually other stores were opened, but Herder and his immediate descendents never extended their marketing area beyong the Philadelphia region.

At its peak, the factory employed thirty men. The work of the plant was directly managed by Herder and later his sons, nephews and grandchildren, all of whom were sent back to Germany in their teen years to learn the cutlery trade. Through 1927, when the factory was closed, every male family member connected with the business received training and served apprenticeships in Germany. There they recruited workers for the factory; as a result the work force at Herder's always was predominantly German with a smattering of Irish-born.

The factory was operated under craft traditions. Only custom items were made. Sheets of iron were heated, annealed, cut,forged with the use of molds, ground, and finished with wooden handles. Master craftsmen directed the work of apprentices and journeymen in each phase of operations (the masters were generally family members). Grinders were also employed to hone used cutlery brought in by customers. Apparently turnover was low and a family and protective atmosphere prevailed in the factory.

In 1927 the property owned by the Herder family was purchased by the city of Philadelphia as part of an urban redevelopment plan. A new plant was not opened and a decision was made to concentrate on the retailing of fine, mostly imported cutlery. The Herder family thus went out of the business of manufacturing knives and scissors. The death of an important family member two years earlier, the unwillingness of the youngest generation of Herders to learn the trade, especially in Germany, and competition from stamped, standarized stainless steel products contributed to the decision.

Today Herder's Cutlery is a retail outlet with several stores in the Philadelphia area. The firm recently lost its one link to the past. Last year Otto Schwartz retired after serving as the firm's master repair grinder for over fifty years. Mr. Schwartz began working for Herder's in 1924 as a kiln helper in the factory. He had been trained in German trade schools and brought to America by Leopold Herder's great grandson. When the factory closed, he stayed to learn grinding. Until last year one could watch him work, treating each item, some of them original Herder knives and scissors, as works of art.

Herder's Cutlery exemplifies the persistance of craft traditions in repair, if not manufacturing, work. The firm also represents a fairly typical family proprietorship, where paternalism was a direct and natural extension of a family endeavor. Finally, the trans-Atlantic interchange of training and skills is truly noteworthy.

Footnotes

[1] This case study was compiled through interviews with Mrs. Lynne Walker, general manager of Herder's Cutlery and descendent of Leopold Herder, and with Otto Schwartz, a grinder who started working for the firm in 1924.

The William H. Horstmann Company[1]

A native of Cassel, Germany, William H. Horstmann emigrated to Philadelphia early in the nineteenth century. He arrived in America with both talents and resources. He was a highly skilled, French-trained silk weaver who enjoyed the financial support of wealthy relatives -- the Sigmund Horstmann family of Germantown, Pennsylvania.[2]

In 1815, using capital advanced by the Horstmann's, William established a small silk weaving workshop near Germantown Avenue and Fifth Street. The moment was propitious for there was only one other manufacturer of silk products in the United States at the time. With the help of several German-born weavers and younger, American-born journeymen and apprentices from Philadelphia's German community, William Horstmann's shop turned out high quality silk labels, ribbons and threads. To avoid competition with foreign imports, Horstmann deliberately decided to specialize in custom products rather than produce broad silk clothes and fabrics.[3]

Horstmann established a fully integrated workshop. Under one roof, raw silk was washed, twisted, dyed, and then woven into specialty items. The shop operated under craft traditions with formal apprenticeship and journeymen training. Since working with silk was a delicate process, all labor -- even in the early stages of production -- required training and skills. Horstmann's business prospered in the early years and by the mid-1820s his firm was the nation's major supplier of fancy silk products.[4]

1824 represented a milestone year for Horstmann and the

American silk industry. In that year he introduced to his plant and the country, the revolutionary Jacquard loom, a loom whose movements were controlled by hole-punched cards. The introduction of this automated device changed work relations in the shop immediately. An operative could be trained to run the Jacquard within days. Horstmann's apprentices and journeymen were soon replaced by relatively unskilled machine tenders, while the skilled weavers were moved into managerial positions (Horstmann did maintain a small core of artisan weavers who worked on the most ornate and specialized products on handlooms; in 1860, the company still had fifty hand looms in operation out of a total of 260).[5]

The transition from handloom to mechanical production changed not only the skill level but sex, ethnic, and residential composition of the work force as well. After 1824 Horstmann began to hire women in his factory and by the 1850s, they came to represent upwards of 85 percent of the total number of workers employed. Horstmann, however, began to use women not only as Jacquard loom operatives, but in all aspects of production save dying (men dominated in handloom production, but there was a small number of women handloom weavers listed in the company's rolls in the 1860s). In all job categories, women workers earned less than men. In the late 1870s a male handloom weaver averaged $14.15 weekly, his female counterpart, $8.44; a male power loom operative earned a weekly average of $11.43, female tenders, $7.94. Horstmann also began to employ non-German workers, though Germanic names predominate by far in surviving payroll records, and people from beyond the immediate neighborhood of the factory.[6]

Following the introduction of the new technology, the Horstmann company prospered. The firm survived the depression of the mid-1830s and then witnessed a twenty year period of tremendous growth in production, sales and profits. In the 1840s, Horstmann diversified his line of products and began to manufacture a wide array of silk trimmings: tassels, braid, fringe, sashes, pompons, tufts, plaits, lace, webbing, and specialized threads. In the 1850s the firm received especially lucrative orders from the U.S. Army for silk regalia items: flags, caps, decorations, scabbards, epaulets, and banners. Further orders poured in during the Civil War and the firm aided the Union effort also by producing woolen overcoats for the military.[7]

To meet expanding markets, the firm enlarged its business and production facilities. In 1842, William H. Horstmann retired and turned control over the company to his sons who ushered in a period of expansion. A large retail store was built in Philadelphia in the early 1850s and sales offices established in New York City and Paris. In 1854, the firm opened a new five story factory on the corner of Fifth and Cherry Streets which critics praised as an architectural masterpiece, and which became the advertizing symbol for all Horstmann products. The firm also began purchasing other silk companies and transporting acquired raw materials and machines to the new plant.[8]

The firm grew vertically and horizontally and by the 1860s the Horstmanns employed between 400 and 450 workers to manufacture and distribute their silk ware. The firm was administered departmentally by function with supervisors appointed to oversee each activity or product line. Printed rules and regulations were also handed to employees. Upon hire,workers, in fact, were required to sign the following contract:

> I, the undersigned, agree to work for WM. H. HORSTMANN AND SONS upon the following terms:
> They shall retain one week's wages through all the time that I continue in their service. These I shall receive when I leave their employ, provided I give them two week's notice of my intention of leaving, and during that time continue to work, and conduct myself properly, and agree to the Regulations of the Establishment. I further agree to forfeit the amount due to me at the time of leaving by failing to give two weeks notice as above, by absenting myself from work (except in the case of sickness), more than two days at one time, without sending work of the cause, by absenting myself without permission being asked and obtained, and by being discharged for bad work, or by bad effort, or infringement of the above conditions.[9]

A surviving employee register sheds some light on the people who signed the above agreement and came to work for the Horstmanns.[10] By the 1860s the overwhelming majority of employees were women. Women could be found working in all departments of the firm, but men dominated in handloom weaving and maintenance crafts and occupied all supervisory posts. Workers with German names predominate in the register, especially in skilled positions, but by the 1870s a greater ethnic mix is apparent. Finally, nepotism seems to have been rife at Horstmann. A minimum of 28 percent of those who worked at the factory labored alongside family members. Whether this was the result of deliberate company policies or a function of the informal practices of supervisors and foremen cannot be readily determined.

Although William Horstmann was an important figure in

Philadelphia's German-American community and a sponsor of learning societies and other civic causes, there is no evidence that the firm after the 1820s paid attention to the educational backgrounds or needs of its employees.[11] Apprenticeship programs disappeared with the transition from craft to industrial production techniques and the company required no formal training of its unskilled and semi-skilled recruits. One can only assume that the small group of new workers hired for handloom work were informally trained by older craftsmen.

The employee register also reveals that the labor force at Horstmann's became more mobile over time, although turnover rates were high throughout the period covered by the records. Between 1850 and 1875, one fifth of those employed stayed at the company for less than one month. Close to fifty percent remained with Horstmann for no more than four weeks, while only one quarter can be deemed as long-term employees, working for the firm for a year and a half or more. Of the latter, there are some true veterans: twenty-four employees labored for more than ten years for the company, two workers remained for twenty-two years.

Certain departments in the firm experienced greater turnover than others. Braiders, tasslers, spoolers, and workers in other highly repetitive tasks tended to stay for the fewest months, while handloom weavers and fancy product workers stayed the longest. Employees with family members in the firm also remained on the company rolls for longer periods of time than workers without kin there.[12]

The employee registers at Horstmann are unusually revealing on the issue of turnover for reasons for leaving the firm are noted by the names of practically all employees listed. More than one third of the men and women employed at Horstmann between 1850 and 1875 left not on their own accord, but because of frequent furloughs and layoffs. The company operated in a seasonal market and with growing competition in the 1860s and 1870s, the plant was opened and closed with particular frequency (the depressions of 1857 and 1873 brought especially difficult times.)[13] Another third of the employees are listed as leaving either by giving or not giving notice and one can only assume that they left to seek other employment or for personal reasons. Another 17 percent of the workers were severed from the company's rolls for disciplinary reasons (male workers more disproportionately than women), while 5 percent left for reasons of poor health, 3 percent to get married, and another 4 percent for a variety of miscellaneous causes.

For a sizable percentage of Horstmann workers -- roughly 50 percent -- the firm thus offered uncertain or undesirable employment. For a quarter of the men and women, however, who entered into employment in the firm, the company offered good work and it is for that reason, that the American and Gazette, a local newspaper, could report the following in 1860 about Horstmann:

> The strictest propriety of conduct is required, and young females who are anxious for situations will wait for months for a vacancy, if they are so fortunate as to obtain a recommendation that will secure their admission.[14]

Other articles contained in the surviving scrapbooks of William Horstmann indicate that the firm gained a reputation as a decent place to work. This had much to do with William Horstmann's position in the German-American community, his visible presence in Philadelphia social and civic affairs and the firm's advertizing. While high turnover belies a rosy portrait, there was some truth to the image for a sizable minority of those who worked for the firm found regular, well paying employment.

The history of William Horstmann after 1880 is cloudy. William Horstmann helped found the American Silk Association, campaigned actively for protective tariff legislation for the industry, and remained active in the cultural and civic life of his adopted city. Surviving records indicate that the firm sponsored an annual employees' outing to Atlantic City in the 1880s and a company baseball team was founded in the same decade (its chief rival appears to have been the publishing company of J.B. Lippincott).[15] There is no evidence of any other initiatives taken on personnel matters. In the 1890s the firm was incorporated and the Hortsmann family withdrew from management; the company gradually moved out of silk into woolen goods production.[16] Wm. H. Horstmann still exists today as a small firm dealing in woolen wastes; the present management has no knowledge or interest in the company's early history.

William H. Horstmann offers an example of a major nineteenth century manufactory which underwent industrial development first through deliberate technological innovation and then through vertical and horizontal integration. The firm's adoption of simple administrative structures and personnel procedures was not untypical of other nineteenth century textile firms. Adequate labor supply and a competitive and seasonal market were two conditions which allowed the firm to maintain an inelaborate labor system throughout the period for which records survive.

Footnotes

[1] This case study is based on seven volumes of primary material on the William H. Horstmann Company deposited at the Historical Society of Pennsylvania.

[2] Scrapbook, Newspaper Clippings, 1867-1888, articled dated August 21, 1873, William H. Horstmann Company Papers, HSP.

[3] Ibid., undated article from the American Cabinet Maker.

[4] Ibid., article dated December 9, 1869 entitled "The Silk Manufacturers of Paterson, N.J.;" "American Silk Manufacture," Commercial Advisor, May 17, 1875.

[5] Ibid., Daily Chronicle, May 20, 1870; The Daily Register, October 22, 1853; American and Gazette, June 27, 1860.

[6] Horstmann and Company Employee Register, William Horstmann Company Papers, HSP.

[7] Scrapbook, Labels Used on Silks and Ribbons, William Horstmann Company Papers, HSP, p. 15.

[8] Scrapbook, Newspaper Clippings, 1867-88, Public Ledger, June 26, 1848; assorted announcements of the firm.

[9] Scrapbook Labels Used on Silks and Ribbons.

[10] Descriptions of the work force at Horstmann are based on a computerized analysis of the Horstmann and Company Employee Register, which includes information on all workers who entered into hire at the firm between 1850 and 1875. Family relations were established when employees with similar surnames entered the firm or left

on the same dates and worked in similar positions (in cases of pairs of odd last names, all of the above criteria were not followed in making matches). A person was not coded as having a member of his or her family in the firm if any uncertainty existed. The figure of 28 percent is thus an underestimate.

[11] Scrapbook, Newspaper Clippings, 1867-1888, assorted flyers and invitations.

[12] Thirty percent of the Horstmann employees with relatives in the firm stayed eighteen months or longer, while 27 percent of those without kin stayed equally long; conversely, 23 percent of the latter worked less than one month while 19 percent with relatives were short term employees. The relationship between relatives in the firm and tenure was C=.12 at the .002 level of significance.

[13] Scrapbook, Newspaper Clippings, 1867-1888, Commercial Advisor, May 16, 1874.

[14] Ibid., American and Gazette, June 27, 1860.

[15] Ibid., assorted flyers and invitations.

[16] Ibid., undated clippings.

The Insurance Company of North America[1]

The Insurance Company of North America was founded in November of 1792 by a group of Philadelphia merchants with an eye to providing reliable maritime insurance to the city's mercantile community. Many of the original founders had been involved with earlier private associational attempts to create funds to insure shipping ventures. What distinguished the new effort was that INA was conceived as a joint stock company to which the public was invited to invest capital (and eventually receive dividends). The Insurance Company of North America, as a result, became the first capital stock insurance corporation in the United States.[2]

The company's founding plan allowed for the writing of life and fire as well as maritime insurance policies. In the first half of the nineteenth century, the insuring of overseas cargoes remained the firm's central concern. Since that time INA has diversified its coverage (creating new administrational divisions in the process). INA today insures commercial and industrial ventures, special events, business properties, homes, personal possessions, and people. INA has grown to be one of the largest insurance companies in the world with assets of $12 billion.[3] The company has also maintained its home offices in Philadelphia since its inception, and, at least in the twentieth century, has been a major employer of Philadelphia working people.

Management of INA remained remarkably centralized in the hands of the company's board of directors until the 1920s when power over all but investment decisions passed to board-appointed officials. The original board was elected by the original group of shareholders. Additional and succeeding appointments to the directory have been made by board members themselves (and not by INA stock holders).[4] Throughout the nineteenth and early twentieth centuries, board members frequently nominated relatives to directorships, especially sons. A number of famous Philadelphia families, in fact, dominated the affairs of the concern for successive generations (the most notable, the family and descendents of Benjamin Rush).[5]

Board members appointed a chairman from among themselves to officiate at bi-monthly meetings and also from among themselves, a president, who became chief operating officer of the company, and a secretary, who was to attend to the paper work and records of the business. Committees were established to oversee different aspects of the enterprise.[6]

In the early years the secretary of the board actually took charge of day-to-day operations of the firm, although he remained immediately answerable to the board. In December 1792, for example, the board authorized the first secretary to employ necessary assistants. With their approval, Mr. William Coulthard was hired as a clerk for $500 per year while John Valentine Cline began work as a porter at $10 per month. Minutes of meetings of the directors of INA in the next 75 years contain additional references to requests by the secretary (or the president of the board) for authority to increase the office force; approval of appointments by the board are also noted in board minutes.[8] By 1881, the office through such formally-approved increments comprised twenty-five workers, mainly clerks to write and file policies and bookkeepers to monitor the flow of revenues (a small staff of surveyors also existed).

A number of clerkships over the years were assigned to younger relatives of board members, presumably as apprenticeships to higher managerial posts.

In 1808, the directors also voted to expand their marketing base beyond the Philadelphia region. Agents to handle the securing and writing of policies were appointed in five Ohio River valley cities.[9] These men served on a commission basis and have always had a separate history at INA. INA agents, for instance, by the turn of the century were located in every part of the country and most parts of the world. Their numbers actually stood at 15,000 by the early 1970s, and their activities became the object of a great deal of the work that transpired in INA's Philadelphia home office.[10]

The first two decades of the twentieth century witnessed notable increases in the business of the firm (especially during World War I), and by 1919 a central office labor force numbering 300 had begun to outgrow the company's quarters. Ground was soon broken for the building of a massive and impressive corporate headquarters in downtown Philadelphia; construction was completed in 1924. At the new building employment grew to 2,100 by the 1960s and has remained stabilized at that level since.[11]

Movement to the new headquarters also brought changes in management, namely the withdrawal of board members from operational decision making.[12] Overall investment strategies and insurance provision remained their domains. Appointed officials oversaw the actual underwriting of insurance policies and directed claims work and compensation. Operating departments for accounting, research, and development were also established (subcommittees of the board formerly had attended to such matters directly). Most significantly, a Home Office Service Committee was created for the new building, a group of four executives officers who were placed in charge of matters pertaining to the recruitment and supervision of employees. The Committee as part of its first initiatives issued a set of rules and regulations for INA workers -- probably the first of its kind for the organization -- and started formal application procedures (with the issuing of forms asking detailed information of applicants).[13]

The actual work of the Service Committee in later years is unclear. It was not replaced by a formal and very visible personnel department until 1956; few records actually exist for the thirty years in which the group operated. It apparently did not initiate internal promotion or job classification systems, nor training programs or fringe benefit plans (INA through the 1940s, with the exception of a pension plan for long-term employees and a few recreational activities, was relatively free of paternalistic efforts).

The establishment of a Personnel Department in 1956 grew from the formalization of training programs in the company a decade earlier. Training of both agents and clerks had traditionally occured on the job. Young clerks and prospective agents at INA normally were assigned to senior workers to gain experience before receiving full appointments. In the 1920s the company began sending a few agents to special institutes at company expense.[14] A plan to establish an in-house school was shelved with the outbreak of World War II. In 1945, H. Paul Abbott was hired for the newly created position of Director of Education. He then hired a staff of instructors to serve in an agents' training program for INA employees that was required for all agents and open to other workers who wanted to qualify for agency positions. Abbott also established courses for other groups of workers. (Abbott's programs initially were established as refresher courses for returning veterans, but soon became permanent fixtures).[15]

In 1956 Abbott convinced INA officials of the need to form a Personnel Department to handle recruitment, training, promotions, and fringe benefits. Abbott argued for more deliberate attention to personnel matters.

Abbott's plan was accepted and he was placed in charge of an office which assumed responsibility for hiring and testing of employees (Abbott instituted batteries of aptitude and personality tests for both applicants and veteran workers); his office controlled training, work assignments, salary and benefit schedules, promotions, and extra-curricular activities. The office represented a vast departure from the more laissez-faire practices of earlier eras.[16]

Today, as in the past, INA offers a varied work experience. INA agents, for instance, from the beginning have occupied a privileged position as employees and have had opportunities to participate in training and bonus programs. Certain white collar positions at headquarters have also remained desirable; supervisors, surveyors, researchers, and underwriters occupy responsible posts with good working conditions and opportunities for advancement.

A large pool of clerks and secretaries, however, fill positions certainly less valued than they were in the nineteenth century. INA until very recently has not developed either bureaucratic or paternalistic initiatives to encourage discipline or loyalty among these workers and is satisfied with fairly high turnover in these positions. The company acknowledges that it does not pay its clerical force as well as other Philadelphia employees.[17] The firm has tended to recruit young women from Catholic high schools with commercial course skills and expected them to remain with INA for only short periods of time.[18] As long as there is a supply of such help, the firm does not consider the upgrading of these positions or other efforts to cut turnover at these levels as worthwhile investments of time or money.

INA, at least until twenty years ago, could hardly be called innovative in terms of personnel affairs. This possibly reflects the conservatism of its management and the conservatism of the insurance industry in general. For one hundred years the office was operated in a traditional fashion. For a firm of its size and influence, it was rather late in formalizing and elaborating its personnel practices. When the firm deliberately attended to labor, INA agents normally received the greatest attention and encouragement. For its large twentieth century, largely female clerical labor force, the firm has offered in some respects work which approximates secondary rather than primary labor market conditions.

FOOTNOTES

[1] This case study is based on primary source materials deposited in the vast archives of the Insurance Company of North America. Three printed company histories, which are listed below, were also consulted.

[2] For an overview of INA's history see: Thomas Montgomery, A History of the Insurance Company of North America (Philadelphia, 1885); Marquis James, Biography of a Business, 1792-1942 (New York, 1942); and William Carr, Perils Named and Unnamed (New York 1967). These works contain very little information on employee matters.

[3] Moody's Bank and Finance, Volume 51, No. 104 (March 25, 1980), p. 2797.

[4] For changing procedures on board elections see: Directors' Minutes, Volume 9, October 1, 1895, p. 24 and January 13, 1897, pp. 68-69, Archives of the Insurance Company of North America.

[5] Directors' Minutes, Volume 15, April 9, 1935, p. 184.

[6] James, p. 160.

[7] Montgomery, p. 47.

[8] Directors' Minutes, Volume 7, September 4, 1877, p. 9; February 5, 1878, p. 16; March 5, 1878, p. 18; April 5, 1881, p. 67.

[9] James, pp. 104-107.

[10] Carr, p. 7.

[11] For employment figures see ibid., p. 7 and files in Record Group 9/4-9/5, Archives of the Insurance Company of North America.

[12] James, p. 323.

[13] "New Building Instructions, October 29, 1925," Record Group 9/4; untitled memorandum from Home Office Service Committee, Record Group 9/12.4; "Employment Application," Record Group 9/14, Archives of the Insurance Corporation of North America.

[14] Carr, pp. 226-227.

[15] For Abbott's work see Record Group 9/6, Archives of the Insurance Company of North America.

[16] Ibid., Record Group 9/4-9/5.

[17] "Philadelphia Salary Market Analysis," Record Group 9/13, ibid.

[18] This contention is based on interviews with a class of thirty INA clerical workers which the author taught in the Spring of 1982. It was confirmed in further interviews with Claudette Johns, archivist of INA, and Lee Corak, Assistant Director of Training at INA during May of 1982.

KELLEY & HUEBER[1]

The firm of Kelley & Heuber dates its origin to 1849. In that year an enterprise with the name of Birmingham and Company was founded which manufactured specialty leather cases and straps. In 1922 the business was sold to Joseph Hueber and Edward Kelley. The former had been a successful salesman with Birmingham while the latter was a silent partner who left management of the company completely to Hueber. Little is known about the history of the firm before 1922.

Edward Hueber came into ownership of a small business that operated in several rooms in a loft building in downtown Philadelphia. Twenty-five employees worked for the company at the time, cutting and sewing leather into specialty items. Two or three salesmen employed by the company marketed products to local jobbers and retailers.

Hueber immediately made plans for expansion. The company moved to its own quarters in Kensington, the industrial center of Philadelphia, in the early 1930s. The work force grew to more than one hundred by the mid-1940s (it would increase to near 300 employees by the time Joseph Hueber's son, Edward, sold the business to Itek Ophthalmic Products in 1969). Most important, Edward Hueber made decisions to specialize in the production of leather eye glass cases (he did not entirely eliminate other product lines), and to strengthen his sales efforts. A full time sales department of twenty salesmen was in place by the end of the World War II and Hueber had further established contacts with wholesalers and retailers throughout the country.

Edward Hueber retired in the early 1950s and his son Joseph took over management of the firm after receiving a BA degree from Yale. Joseph continued his father's initiatives and despite expansion, never ceased to run the business as a family firm.

Production was organized along the following lines at Kelley and Hueber. The firm purchased fully treated and dyed leathers from suppliers (Birmingham and Company had treated hides but Edward immediately affected the change from processing and production to finished goods work only). The leathers were then cut to pattern either with mechanical cutting tools or presses. Cut pieces were subsequently sewn together on heavy industrial sewing machines and finished. The Huebers maintained a fully operational machine shop where mechanical implements were manufactured and repaired. This allowed the firm to repattern and retool quickly to maintain production of custom goods. The company based its success on the ability to meet special orders on short notice.

The Huebers appointed a production manager to oversee the manufacture of tools and products. They attended primarily to office and sales work. In the late 1920s Edward Hueber placed one machinist in charge of operations and that person remained as the firm's only plant superintendent until his retirement in the early 1960s. Apparently he remained close and loyal to the Hueber family and was singularly in charge of production (although there was a chain of foremen under his command to see directly to the machine shop, cutting and different sewing areas).

Hiring and firing remained a definite prerogative of the production manager. Generally, people were hired from the neighborhood and family hiring was a definite practice. Males were employed for cutting and for work in the machine shop while women were engaged in sewing and finishing. Throughout its history, Kelley and Hueber never required a high school diploma of its production workers and assumed no prior training on their part (although prior work history was important as obviously was family connection). All workers were trained on the job by the production manager himself or his foremen. The company never established formal apprenticeship or other kinds of skill programs. An exception was the sales department where the Huebers sought the services of business college graduates (although a degree was never a preprequisite for employment there); they also offered their salesmen lessons, at first informal and then formal, in marketing techniques.

The Huebers tried to maintain a family and personalistic spirit to the business. They knew many workers on a first name basis, offered their employees occasional gratuities and held special outings (they were not especially innovative in the area of benefits until the 1960s). All attempts at unionization at the plant, it should be noted, were met with still resistance. Loyalty did remain high, though. This probably had much to do with the production manager and his personal relations and knowledge of the neighborhood and the people who came to work for the firm. Turnover was never a problem. Kelley and Hueber in terms of management, recruitment and training was fairly typical of many small, specialized manufacturing businesses that operated in Philadelphia when it was a thriving industrial city.

FOOTNOTES

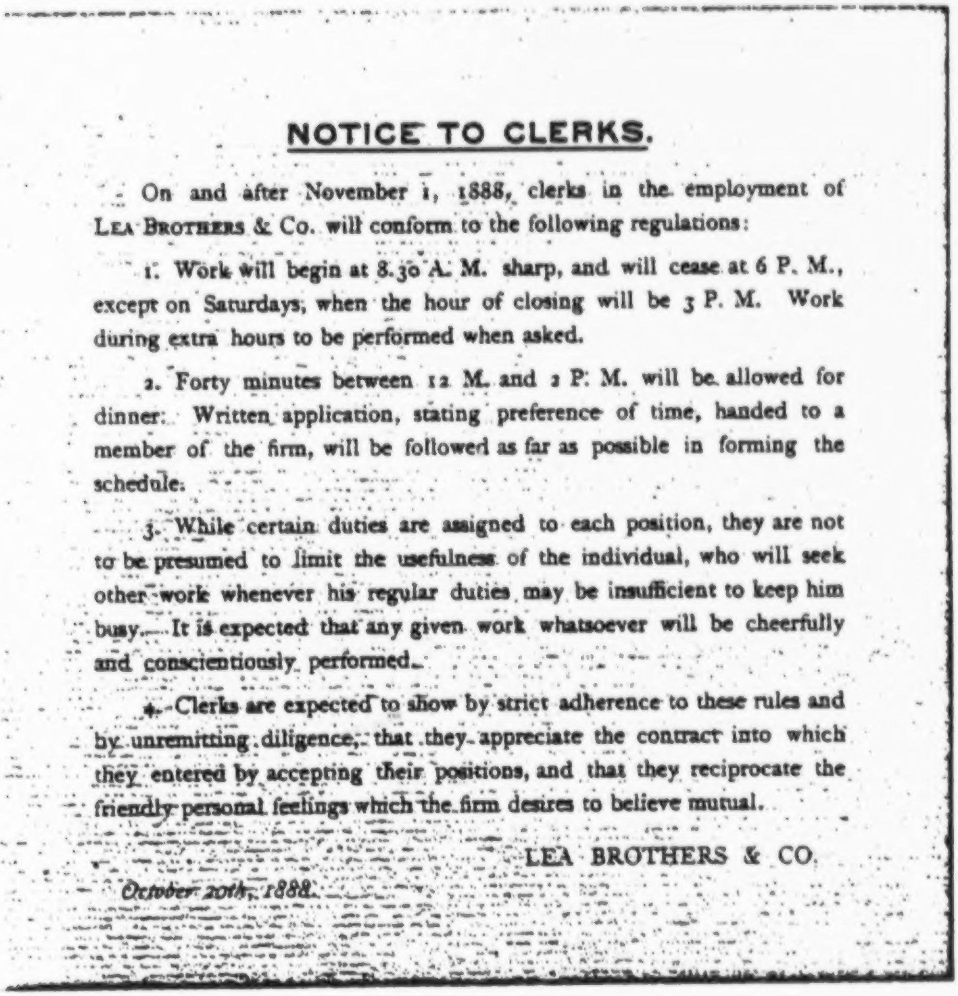
[1] This case study is based on interviews with Edward K. Hueber, former owner and operating manager of Kelley and Hueber. No written materials of relevance from the firm survive.

Lea & Febriger[1]

Lea & Febriger, founded in 1785, is the oldest existing publishing house in the United States. The firm was established by Matthew Carey, ardent pamphleteer and patriot, and it has remained a family business and fixture in Philadelphia's prominent publishing and printing world. While in the early years, the company published a variety of books and journals, since the mid-nineteenth century, Lea & Febriger has specialized in publishing medical texts (the twenty-ninth American edition of Gray's anatomy is a recent offering).

Lea & Febriger has always been a small publishing house. The firm since its inception has relied on outside printing companies for the actual production of its books and texts. The company has maintained a small office with family members serving as managers and editors and a work force never numbering more than twenty of salesmen and clerks.

The office in the nineteenth century was run quite traditionally. Male clerks came to work in frock coats and proper manners and decorum were expected. Clerks received the following formal instructions (this notice is the only surviving memorandum relating to personnel):



NOTICE TO CLERKS.

On and after November 1, 1888, clerks in the employment of Lea Brothers & Co. will conform to the following regulations:

1. Work will begin at 8.30 A. M. sharp, and will cease at 6 P. M., except on Saturdays, when the hour of closing will be 3 P. M. Work during extra hours to be performed when asked.

2. Forty minutes between 12 M. and 2 P. M. will be allowed for dinner. Written application, stating preference of time, handed to a member of the firm, will be followed as far as possible in forming the schedule.

3. While certain duties are assigned to each position, they are not to be presumed to limit the usefulness of the individual, who will seek other work whenever his regular duties may be insufficient to keep him busy. It is expected that any given work whatsoever will be cheerfully and conscientiously performed.

4. Clerks are expected to show by strict adherence to these rules and by unremitting diligence, that they appreciate the contract into which they entered by accepting their positions, and that they reciprocate the friendly personal feelings which the firm desires to believe mutual.

LEA BROTHERS & CO.

October 20th, 1888.

Apparently working for Lea & Febriger was an honor for turnover was slight and the owners of the firm quite solicitious of their employees needs; gifts on holidays and paid vacations were an institution at the firm by the turn of the century.[2]

A noticeable change in the office did occur in the 1900s. The first women clerks were hired in 1905 (they were at first all college educated women and later high school graduates); gradually the office was also mechanized with typewriters and billing machines.[3] The title of clerk was dispensed with and bookkeepers and secretaries were now hired and employed. According to the present proprietors, however, the quaint spirit of the place was not transformed. Decorum is still an important matter and Lea & Febriger boasts a loyal staff with long tenure (a visitor to the company's three-story Victorian office on Washington Square, the traditional center of Philadelphia's publishing industry, cannot be but transported back to the nineteenth century).

Lea & Febriger is an example of a small office where tradition and custom have been prime motivators. A relic of the past, perhaps, the firm is not unrepresentative of work relations and arrangements in small, venerable, family owned and operated businesses.

Footnotes

[1] This case study is based on interviews with Christian Spahr, one of the four owners of Lea & Febriger and a descendent of Matthew Carey, the founder of the company. Assorted records and materials deposited in the vault of the firm were also consulted.

[2] Roll of Employees, 1890-1910, located in the company vault of Lea & Febriger.

[3] Ibid.

The McCloskey Varnish Company[1]

James and Frank McCloskey founded the McCloskey Varnish Company in 1854 (originally the company was named McCloskey and Brother and manufactured only paints). Although Frank was a color chemist and his brother an exceptionally successful salesman, the firm barely survived in its early years and entered into bankruptcy during the depression of 1873. The company revived after numerous partner changes and the discovery of a formula for interior and exterior varnish by Frank McCloskey's son in the early 1880s. A decision was then made to concentrate on varnish production and in 1885 a plant was built for that purpose on 30th and Locust Streets along the west bank of the Schuylkill River. McCloskey Varnish remained a fixture in West Philadelphia until 1930 when the Pennsylvania Railroad bought land along the river front to complete its new terminal. Land was then purchased by the company in northeast Philadelphia and a factory built which is still in operation today.

Until recently McClosky was a small concern. In 1930 no more than six men worked in the Schuylkill River factory and as of 1950, the company employed less than fifty people (total employment is 125 today). Though small, the firm was not untypical of other Philadelphia paint and varnish manufactories. Entrance costs to the industry were relatively small and firms proliferated in the city during the late nineteenth and early twentieth centuries. Automation and rising capital costs in the last thirty years have reduced the number of paint and varnish producers to a handful of larger concerns.

Until fifteen years ago practically all labor at McCloskey was hand labor. Resin, gum and coloring were cooked in large open vats and the resultant varnish cooled, thinned, poured, canned, and labelled without the use of machinery. In 1966, managers of the company, facing an expanding market, decided to build an automated reactor which has practically eliminated labor in basic production (the machine is overseen by dial watchers and valve turners). Labelling and automatic filling machines were then adopted in the mid-1970s. That the firm survived with fairly primitive production techniques until recently is testimony to the openness of the market and the reputation of McCloskey's varnishes as high quality products (especially for industrial uses). Although such giants as DuPont automated their varnish manufacturing facilities as early as the 1920s, the company was able to carve out a specialized market which is nationwide in scope.

Expansion over the years has generally forced changes in personnel practices at the plant. In the 1930s six men worked in the factory and there was a small clerical and sales force in the office (the sales force was comprised of several of the partners of the firm). The men in the plant worked as a team and there were no occupational distinctions or fixed divisions of labor. The work was also arduous and dangerous (noxious fumes forced many to seek employment elsewhere, although according to one veteran employee, turnover was never excessive).

After World War II, production expanded dramatically with rising demand for varnish accompanying the post-war factory and home building boom. A division of labor was then affected at

McCloskey with men designated specifically as varnish makers attending to the heats and a separate force of fillers and packers (both men and women) assigned to the newly created shipping department. Increased specialization of tasks was then formalized in 1953 when a new group of owners hired a new efficiency-minded managerial staff. Specific jobs and job ladders were subsequently established and the slow progress toward full mechanization begun. To encourage productivity, the company also began to offer its employees various benefits for the first time, including paid vacations, medical insurance, and a pension plan.

Over the years the firm has recruited workers from the Philadelphia region largely through newspaper advertizing. Until 1953, hiring of family members was common; since that time the practice has been frowned upon by management. The firm still does not have a personnel department and hiring is handled by one secretary who recruits upon requests from supervisors and foremen. Promotion from within is generally followed; employees with commercial course backgrounds can transfer from the plant to office work (McCloskey, however, has never had educational requirements for employment).

Finally, the firm has been subject to several union drives, initiated totally from the outside, but remains non-union to this day. McCloskey has been run and thought of as a family business (despite the fact that the McCloskey family has not been connected with management for more than fifty years). Turnover remains low and workers enter the firm expecting full time, possibly life time employment. Last year with falling orders, the company had to furlough workers for the first time in its history. Mechanization and economic recession may force changes in labor relations and arrangement in the future. Meanwhile, McCloskey represents a small firm where attention to personnel matters is of recent origin. Smallness, a single product line, and a fairly stable sales market has allowed the firm to pursue its particular history as an employer of Philadelphia working people.

Footnotes

[1] This case study is based on interviews with S.E. Firestone, President of McCloskey Varnish, and Alice Carducci, whose father began working for the firm in the 1920s and who began working there herself with her father's assistance in the early 1950s.

Perseverance Iron[1]

A firm with the name Perseverance Iron was founded by Stephen Field in the early 1850s. The company manufactured cast iron stoves and heaters. In the late 1860s Perseverance Iron was taken over by James Lanning and the business remained in the hands of the Lanning family until its closing in July of 1981.

James Lanning entered the iron foundry trade without any expertise or knowledge of the industry. He had operated a dry goods store on Market Street which he was forced to close to pay off a debt on a note he had co-signed (the other signer disappeared). After complying with the demands of the bank holding the note, Lanning was asked by the bank to investigate the management of a firm which had passed into the bank's hands through receivership. The business was Field's Perseverance Iron Company and Lanning's report so impressed bank officials that they asked him to manage the firm as a bank employee. Lanning accepted, confident that he could run the office and leave production to the men in the shop who had continued to produce ironware despite poor marketing decisions made by the former owners and the bank takeover. In 1865, Lanning bought Perseverance Iron outright at a bank auction.

In the 1870s and 1880s, the company produced cast iron stoves. The market for stoves was highly competitive and in the 1890s Lanning decided to limit stove output and manufacture cast iron school desks for the growing public school systems in the Philadelphia area. A switch to steel desks, however, in the early 1900s left the firm with a warehouse of iron desk parts and it was then that Perseverance Iron began to concentrate on small-batch castings of highly specialized machine parts. Until its closing, the firm survived on parts orders (mostly for replacements), although stoves, French kettles, gates, and iron barrels were also occasionally produced.

For more than one hundred years the production process at Perseverance Iron remained the same -- the few innovations came in kiln procedures, iron and silicon use, electrification of drilling and finishing machinery, and the adoption of mechanical lifting devices. A visitor to the foundry in 1980 could easily be transported back to the late nineteenth century. Production of iron parts proceeded as follows.

Customers came to the firm with either wooden or iron patterns of parts (in the late nineteenth century two or three pattern makers worked for the firm; in this century the company has relied on clients supplying their own patterns). Skilled moulders then placed the objects in specially made box frames, sand was shoveled into the frames and packed, gate holes were made for the pouring of liquid iron, the pattern was then carefully removed and the impression in the packed sand refined and finished. Moulders would work from dawn preparing their frames and by tradition at 2:30 in the afternoon all employees in the shop would participate in the daily pouring and casting (a kiln man and his helpers meanwhile had prepared the crucible of molten iron; after 1940 a new kiln allowed for continous heatings and as a result, the traditional mid-afternoon pourings were dispensed with). While the castings were supervised by shop foremen, the moulders themselves set the pace and quality of the process.

Within one half hour of the traditional pouring, the casts were solid enough to be "tapped" or shaken from the sand molds and frames. They would then cool overnight and the next day be finished by grinders working at drill presses and lathes.

Throughout its history, Perseverance Iron never employed more than twenty-five or thirty men at a time. Normally fifteen to twenty worked in the shop with temporary hands hired during periods of increased orders. From one half to two thirds of the labor force were moulders and their assistants with kiln men, finishers, carpenters (to make the frames), and general laborers to help with warehousing and shipping, comprising the rest. Employees of the firm tended to come from the neighborhood. The shop was located in southeast Philadelphia and as the immediate area went from Irish to Italian and in the 1960s to black, the ethnic composition of the work force changed accordingly.

Until 1916 all hiring, training and supervision was conducted by shop foremen. Relatives of employees, especially sons, were favored for employment when openings for jobs occured. Turnover generally was low; the firm had a core of long term employees who were not furloughed in slack times and a pool of temporaries for peak business periods. The firm assumed no prior training or knowledge on the part of recruits; in fact, on the job training was preferred and a high school diploma was never established during the firm's long history as a prerequisite for employment.

In 1916, employment arrangements and relations changed at Perseverance Iron when the International Moulders and Foundry Workers Union, an affiliate of the American Federation of Labor, was recognized as a bargaining agent for the moulders (drillers and others remained without union coverage until the 1930s when the AF of L pressured by CIO gains in Philadelphia exerted a renewed effort at unionizing craft workers in the city). The moulders union, it should be noted, was actually invited into Perseverance without prior organizing or strike activity; the Lannings recognized the union after union officials pledged to solve what had become a severe alcohol problem at the firm.

The contract signed with the moulders in 1916 provided for new wage schedules, hours limits, and union control of apprenticeship and hiring. Fringe benefits, such as paid vacations and medical insurance, only became covered by contract after World War II. The Lannings themselves never innovated with paternalistic programs short of giving turkeys away at Thanksgiving and Christmas.

While the firm could only hire skilled workers from union hiring lists after 1916, apprentices could be employed without union approval (their numbers, however, were strictly limited by contract). A basic four year apprenticeship program had existed in the factory as early as the 1870s and was continued. In the 1940s, faced with a shortage of skilled moulders -- it was an occupation that had largely been eliminated through technology -- the firm decided to upgrade its apprenticeship training with union approval. A set of formal courses with films were created and a relationship with Dobbins Vocational High School established. It was hoped that trainees would finish their high school work while receiving special training at the company. In practice few apprentices completed their regular high school degrees, dropping out at sixteen to work full time for Perseverance.

Perseverance Iron remained a small-batch, non-automated, outmoded iron foundry until 1981 when the fourth generations of Lannings decided that the firm could not possibly turn a profit. Perseverance Iron came to be a museum piece -- watching the cooperative daily pouring in 1980 provided a picture of how teams of skilled workers were in charge of production one hundred years ago. Two points about the firm's employment history deserve emphasis: first, formalization of hiring procedures through unionization and the concommitant reduction of the powers of shop foremen did not eliminate the practice of hiring relatives of employees (in fact, the union contributed to the slow integration of blacks into the firm); second, Perseverance Iron is exemplative of firms that prefer to train their own workers on the job rather than rely on outside institutions because they are involved in the production of specialized, small batch goods. With the exception of an experiment in the 1940s, the owners of the company never placed much weight on schooling and educational credentialing.

Footnotes

[1] This case study is based on interviews with Percy Lanning, president of Perseverance Iron and on perusal of assorted papers in his possession.

The Philadelphia Contributionship[1]

The Philadelphia Contributionship, the nation's oldest fire insurance company, was founded in 1752 by Benjamin Franklin and a group of his associates. To insure against losses from fire, Franklin and his friends decided to contribute monies into a fund which members could draw on when fires damaged or destroyed their homes or businesses (a frequent occurrence in colonial Philadelphia). At first contributors to the plan were personally liable for claims if they exceeded the assets of the fund; in 1762, the founders of the Contributionship incorporated and with the principle of limited liability established, sought to encourage other Philadelphians to buy policies from the company. What was offered was perpetual fire insurance paid for in one premium at the outset of coverage. In 1960, the Philadelphia Contributionship began writing home owners' and mortgage insurance policies; until that time, perpetual, one-payment fire insurance represented the firm's sole business, business involving minimal clerical and bookkeeping tasks. As a result, until very recently, the work of the Contributionship was conducted in the setting of a small office.[2]

Before 1836 the Contributionship employed only one full time employee. The board of directors of the corporation hired a clerk who worked in his own home to write policies and collect premiums. He reported each month to the directors, who approved all applications, directly set rates and fixed compensation for claims (the board also contracted with a surveyor to inspect properties of applicants and prepare reports when fire losses occurred). Only in the early twentieth century did board members of the Contributionship relinquish operational functions to hired staff officers and focus entirely on investment decisions and long-range planning.

In 1836 the directors of the Contributionship authorized the building of an office in Society Hill to house the business (a beautiful Georgian structure which serves as the company's headquarters to this day).[3] In this new setting, the chief clerk of the firm was now assisted by a small clerical staff which never comprised more than five employees in the nineteenth century. The clerks were all male, mostly relatives of board members (sons and nephews) and clerking was considered an apprenticeship to serving eventually on the board or managing other businesses. As a result, the clerks were generally college educated men (Princeton and the University of Pennsylvania were favored institutions).

Important changes in the office were effected in the first two decades of the twentieth century. Board members first made the decision to increase the responsibilities and numbers of hired operating officers. The chief clerk's tasks were subdivided into three positions and each manager was assigned his own clerical staff (the work force grew accordingly to between fifteen and twenty by 1925). To increase efficiency, typewriters and phone service were also introduced in the first decade of the century. Most notably, in 1917 the managers of the Contributionship hired the first female employee, a young woman as a clerk. The backdrop to this decision was World War I and the difficulties the firm faced in recruiting trained male office help.[4]

By the mid-1920s the clerical and secretarial staff had become largely female. With few exceptions the women hired were high school graduates with commercial course degrees. Few stayed with the Contributionship for long periods of time and apparently the firm did little to encourage longer tenure. Despite the addition of women, the company remained a decidedly male preserve. The personal and occupational history of Walter Smith, a recently retired Secretary Treasurer of the Contributionship, illustrates this point well.

Smith grew up in Philadelphia in what he described as a lower middle class home. He attended Central High School in the late 1920s where he pursued a commercial course degree. His decision not to enroll in the school's college preparatory program was based on his parents' limited resources and the unlikelihood of his being able to attend college; like many of his friends he saw a commercial degree as a means to achieving white collar employment upon graduation.

Smith graduated from Central High in the ominous year of 1930 and was fortunate to obtain a position as an office boy and messenger at the Contributionship (through a newspaper advertisement). He remembered that most of his classmates took similar jobs in other Philadelphia insurance firms and brokerage houses and that they frequently saw each other when traveling on errands through the city.

In the late 1930s Smith began taking night courses at the Wharton School and eventually received a college business degree. He stayed at the Contributionship, climbing through the ranks and became a chief officer in 1965 (he, however, has never been asked to serve as a member on the board). His story is not exceptional for the firm or as he notes, for the insurance business in general. No female employees of the Contributionship, however, have had similar career histories.

The Philadelphia Contributionship remains a small office. The firm has never developed deliberate personnel policies (only recently have fringe benefit packages been offered). For male employees it has been a comfortable place to work with prospects for advancement. The social backgrounds of the male clerks may have changed over the course of the last two centuries, but not their apprenticeship status (nor their possibilities). The female clerical staff fills a narrower function and has narrower prospects. The Contributionship also provides evidence of the role played by commercial high school courses in replacing older forms of clerical apprenticeship and in democratizing white collar employment.

Footnotes

[1] This case study is based on interviews with Walter Smith, retired Secretary Treasurer of the Philadelphia Contributionship, and Carol Wojtowicz, Curator and Archivist of the firm, as well as on assorted printed materials listed below.

[2] A basic history of the firm can be found in Nicholas Wainwright, The Philadelphia Contributionship for the Insurance of Houses from Loss by Fire (Philadelphia, 1952).

[3] Carol Wojtowicz, "Office of the Philadelphia Contributionship," 227th Annual Report of the Philadelphia Contributionship (1979).

[4] Interview with Carol Wojtowicz.

The Philadelphia Gas Works[1]

In 1834 the City Council of Philadelphia resolved to commit the city to the manufacture of coal gas for use in street lighting and private homes. The move capped twenty years of debate over the feasibility and safety of municipal gas production. Two years later the first gas works was completed and a section of Society Hill lit up by gas lights.[2]

Between 1836 and 1841 the Gas Works remained in private company hands with a city council appointed board of trustees. In 1841 the city bought the stock of the company and the trustees assumed full managerial responsibilities. In 1887, the vastly expanded gas production and distribution facilities of the city were placed under the control of a city department directly accountable to the mayor. Reports of corruption and waste in the department and complaints of poor service then led to a series of hearings and investigations and in 1897 a decision was made by the city council to return the management of the gas works to private hands. In that year the city thus signed a long-term lease agreement with a private concern, the United Gas Improvement Company; under terms of the arrangement, UGI was to operate and continue building the system and receive one quarter of all earnings with the rest payed to the city treasurer. Renewed leases with UGI made the bargain more favorable to UGI stockholders.[3] UGI managed the Philadelphia Gas Works until 1972 when the city council decided to turn over management of the works to a mayor and council-appointed municipal commission.

Throughout its history the Philadelphia Gas Works, whether privately or pubicly owned or managed, has been a major employer of Philadelphia working people. In 1841 PGW had a staff of fifty; by 1860, 742 employees labored for the works and by 1885, 2,257. Employment rose to 3,000 by 1930 and has remained fairly constant since.[4] PGW historically has been one of the single largest employers in the Philadelphia labor market.

The works has always engaged a diverse task force. Gas production, sale and distribution involves varied activities and as a result, PGW has employed in great numbers both blue and white collar workers and both skilled and unskilled.

In the early years, the largest number of laborers were occupied in the actual production of gas in retort houses. The stoking of the retorts with coal, the vaporization of the produced coke, subsequent filtering and storage was arduous and dangerous work (men worked in two twelve hour shifts as well). Largely unskilled labor was employed. By the turn of the twentieth century, much of the production of gas had become mechanized and automated and the gas plants themselves accordingly have come to represent a small percentage of the total work force (a few dial watchers and valve turners can operate these facilities; in 1948, PGW also began purchasing natural gas from western suppliers and terminated actual production of coal gas).[5]

A stable and fairly large proportion of PGW employees have been occupied in distribution: in the laying of pipe lines, placement of meters, and in service, repair and emergency work. In the nineteenth century armies of temporarily hired ditchdiggers, largely immigrants, were involved in the burying of pipe. That task has been greatly mechanized; there has also been less need for establishing new lines (in fact, portions of the city still receive gas from cast iron pipes that were placed in the 1830s and have yet to corrode). As a result, a relatively small permanent work force today sees to the maintenance of existing pipes and the installation of new customer service.[6]

What represents the largest proportion of workers today was the smallest one hundred years ago: meter readers, customer service representatives, sales people, clerks, billers, auditors, accountants, financial planners, etc., all involved in the control of revenues into and out of the agency. Despite mechanization at first (typwriters, addressographs, phones) and computerization recently, the clerical and white collar side of PGW's task force has been a constantly growing proportion of total employment.[7]

Until the takeover by UGI in 1897, the management of the gas works' personnel appears to have been haphazard and without deliberate initiatives. Top officers were appointed by city officials. Within ten years, a basic functional division of managerial responsibility had developed with department heads for production, distribution, accounts, etc. (an approach expanded but basically intact to this day). Departmental officials before 1897 were also officially appointed by municipal authorities, but below that level, hiring was a prerogative of local supervisors.

Employment before 1897 apparently was also a political matter. High officials of PGW usually received their posts as rewards for party service. They in turn made further appointments on the basis of political loyalty. Ward bosses finally made recommendations as to workers to be hired (local ward healers were most favored);

it should also be noted that men receiving employment were expected to donate portions of their wages and salaries to their respective party's coffers. The operation of PGW was thus enwrapped in political patronage and the agency often became a political football. During the depressions of 1857, 1873 and 1893, for example, various aldermen on the city council petitioned to have PGW lay more gas lines as a relief measure to employ the unemployed.[9]

Politics did not make for efficient operations. In the 1880s, for instance, there was a near doubling in the number of people employed which bore no relation to actual needs. Pilferage was rampant, discipline low, and a series of strikes of retort workers which completely shut gas supplies led to outcries, especially among reformers, for changes in PGW's management. Complaints by customers of poor service also played an important role in UGI's eventual takeover.

UGI officials once in power moved quickly to cut employment, fire political appointees, fully automate gas production, and mechanize office work.[10] To operate the new typewriters, mechanical billers and addressographs, the company also began to hire high school educated women, though employment of women remained low at the 10 percent level through the 1920s (installation of phone service for customer orders and complaints greatly added to the complement of female workers in the 1930s);[11] black employment, it should be noted, was also low at PGW with a few blacks hired as retort stokers and segregated gangs of blacks as ditchdiggers to lay pipes.[12]

UGI managers changed working conditions and relations in other ways, too. Phone usage was implemented in repair work which greatly altered the working day of repairmen, who were now ordered to call in periodically to receive new tasks.[13] Recognizing that electricity would replace gas for lighting, UGI officials created an appliance department to sell gas stoves, refrigerators, furnaces, and water heaters, a move which created a large sales staff (they also started to deliberately market various waste products of the gas production process, such as tar).[14] To gain loyalty of PGW employers, hours were reduced from sixty to fifty a week in 1910, a system of paid vacations begun in 1915, a medical dispensary and dental clinic for employees built in the same year, and various company sponsored recreational activities (including a company baseball team) established.[15]

The most critical change in employment practices, however, occured in 1917 when UGI officials created a Personnel Department to oversee all labor-related matters.[16] The backdrop for this decision was World War I when the company, faced with manpower shortages, was forced to recruit new workers in a deliberate fashion (the move toward rationalizing procedures began before the war and it is likely that an official personnel office would have been created eventually had the country not joined the fighting).

The Personnel Department was given complete control over hiring. When workers were needed, supervisors informed personnel officials of openings; they in turn advertized for recruits and then interviewed and tested applicants (aptitude tests were administered as early as 1918). Formal training programs were also established.

Before 1917 workers were trained on the job; new employees after 1917 attended two-to-four week training classes depending on their positions. The Personnel Department similarly created an extremely detailed job classification and description system to be used for promotions and disciplinary purposes (after 1917, rule books and updated circulars became important components of the work experience at PGW).

In the 1920s the personnel office maintained a highly visible presence by initiating a series of paternalistic programs. These included life insurance and pension plans, a quarter century club, a loan association, and a program of half tuition payments for courses taken in a worker's specialty.[17] In 1933 an Employees Association was also created by Personnel to coordinate the growing number of recreational activities sponsored by the department (everything from a company chorus, band and orchestra, to dances, picnics, bowling and dart throwing tournaments, fishing trips, flower and fashion shows, and an employees' newspaper and magazine). In the same year an Employees Representative Committee was established to handle grievances and other labor related problems (an independent union still does not exist at the Gas Works).[18]

PGW's employment history offers a good example of efforts to establish labor control through bureaucratic and organizational means. Technical solutions to the management of labor were available in production where automation gradually eliminated labor. Despite mechanization and computerization in the office, non-production PGW workers remained remarkably autonomous (meter readers and repairmen, for instance, are unsupervised for a good part of their working day; the activities of sales people, phone operators and office workers are hard to regulate and special incentives were deemed by UGI officials as necessary for improved productivity). Before 1897 personal connections and political favors functioned as prime motivators; UGI sought to motivate through organizational means and rewards. UGI's need to return a profit -- the city could rely on general tax revenues to cover losses when municipal authorities ran the works -- the very complexity and diversity of activities at the agency, the growing white collar component of the work force, and the public nature of the operations -- private enterprises generally escape the public scrutiny faced by gas works managers -- all contributed to the deliberate personnel initiatives taken by UGI officials during the first third of the century, initiatives that effect work relations and arrangements in the works to this very day.

Footnotes

[1] This case study is based on assorted records and materials deposited in the archives of the Philadelphia Gas Works and interviews with officials of the Public Relations Department of PGW.

[2] Walton Forstall, "One Hundred Years of Philadelphia Gas Supply" (unpublished manuscript in possession of the Public Relations Department of the Philadelphia Gas Works, 1935), pp. 2-10.

[3] Forstall, pp. 10-14.

[4] Ibid., Figure 30.

[5] The Philadelphia Gas Work News, 22 (July-August 1950), pp. 4-15, 58.

[6] Ibid., pp. 16-27.

[7] Ibid., pp. 16-41.

[8] Forstall, p. 108.

[9] Ibid., pp. 153-159.

[10] Ibid., pp. 162-172.

[11] Statistics on Employment, Executive Committee Minutes, Book No. 5, Archives of the Philadelphia Gas Works.

[12] The Brown American, July 1938, pp. 4-12. This article on black workers at UGI was found in a file of miscellaneous papers at the archives of the Philadelphia Gas Works.

[13] Forstall, p. 255.

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[14] Ibid., pp. 240-247; The Philadelphia Gas Works News, 1950, pp. 42-49.

[15] Ibid., p. 54, 60.

[16] Ibid., p. 54; Forstall, pp. 255-258.

[17] Ibid., pp. 258-264; Circular Letters 3093-3097 of Personnel Office, Circular Letters, Archives of the Philadelphia Gas Works.

[18] Philadelphia Gas Works News, 1950, p. 63.

The Richard C. Remmey Son Company[1]

The Richard C. Remmey Son Company dates its founding to 1735 and the arrival of John Remmey to these shores from his native Germany.[2] Remmey settled in New York City where he opened a pottery shop. There he manufactured stoneware jars, crocks and crucibles. Remmey had learned his trade in his homeland and subsequently taught the craft to his sons and grandsons. Three generations of Remmeys remained in New York City producing stoneware items.

In 1810 one of John Remmey's numerous grandsons, Henry Remmey, migrated to Philadelphia and established a pottery at Marshall Street and Girard Avenue. He was soon succeeded in business by his son, Henry Harrison Remmey, who remained in charge of the firm until his death in 1879. During his directorship, the company became a prosperous and reputable producer of stoneware pitchers, plates, bowls, tiles, and pipes. As a sideline, the firm also manufactured fire brick for use in kilns and ovens.

In 1859 Henry Harrison's son, Richard Clinton, assumed direct management of the company and proceeded to change the nature of the business and production at the firm dramatically. Industrial demand for ceramic wares was growing in the second half of the nineteenth century and Richard Remmey reacted accordingly. Under his leadership the Remmey family gradually abandoned the manufacture of domestic stoneware and devoted their full resources to the output of refactory materials for use in laboratories and industry. Eventually the firm developed a varied and sizable product line, including clay and silica fire bricks and tiles for ovens, kilns, and furnaces, large-scale crucibles for mixing and melting processes, insulators for electrical use, and specialized pipes.

A change in market strategy demanded changes in production and organization, and Richard Clinton also oversaw the conversion of the Remmey pottery into an industrial concern. He first moved the company to larger quarters, to a factory that would comprise thirteen acres by 1900. In 1895 he broke ground for a second facility, a plant that was only completed after his death in 1904, which occupied twenty-five acres along the Delaware River in northeast Philadelphia. Production would eventually center at the Delaware River facility to which clay and chemical resources could easily be shipped and from which finished products could be sent by either rail or boat. Richard Clinton also began purchasing acres of clay beds in surrounding counties in Pennsylvania and New Jersey to insure a constant supply of raw materials.

Richard C. Remmey affected significant changes in production within the plant as well. The old pottery had been operated on craft principles, although the volume of output of domestic products was sizable. Master potters, in most instances members of the Remmey family, supervised apprentices and journeymen in the preparation of clay, the forming of objects on wheels and in molds, and subsequent glazing and kiln work. There was no marked divisions of labor; e.g., no particular person was assigned to decoration or firing. All finished pieces were marked by the master potter, which in most cases meant the stamping of the initials of a Remmey family member. During the nineteenth century, the Remmeys generally recruited workers from Philadelphia's German-American community and maintained formal apprenticeship and journeymen training programs.

Mass production of standarized industrial products required other arrangements and through mechanization and detailed divisions of labor, Richard Clinton dissolved craft structures and relations within the firm. Men were now hired for specific and largely semiskilled and unskilled tasks. For example, the clay and chemical storage areas were enlargened and by 1900 the factory was receiving tons of material on a daily basis. The raw materials at first were transported by hand carts and kneaded manually by general laborers employed for that purpose; in the new factory on the Delaware river, mechanical shovels and lifters, conveyor belts and mixers replaced hand labor -- machine operatives now handled the preparation of massive amounts of resources. In some respects, however, new skill needs were created at this first stage of production. The Remmeys began to experiment with new silicas, clays and chemicals for the manufacture of refractory items and established, as a result, a laboratory for the development of new ceramics and quality testing of raw materials. The laboratory was staffed by college educated chemists and engineers.

The actual manufacture of products was also mechanized and remarkably early (by World War I the Richard C. Remmey Son Company was known in the refractory industry as a leader in mechanized and automated production techniques). Conveyor belts transported processed raw materials to molding areas where the clay or silica was mechanically packed into molds or into slabs to be mechanically cut into bricks or other shapes. Fork lift trucks then moved cases of unbaked items to large kilns where they could be mechanically placed and stacked (in the nineteenth century, the stacking of small kilns by hand was a laborious and time consuming process; the Remmeys also developed many of the first large-scale, intensive heat kilns used in the industry, which were constructed of materials produced at the plant).

The heats in the kilns were also mechanically controlled (master potters years before used their own judgment here) and when finished, fork lift operators transported the baked materials to automated glazing areas (and then back to the kilns for reheating). Through such mechanical innovations, the Remmey firm became a major and respected producer of refractory products within a twenty year period of transition.

The pottery was thus transformed. The plant was divided into resource preparation, molding, kiln, glazing, storage and shipping areas with workers hired for distinct tasks. Machinery greatly replaced hand labor and skills. Craft, however, was not completely eliminated, just transformed. As noted earlier, new expertise was required in the laboratory. Similarly, pattern and mold making became extremely important aspects of production in which new and old skills were required. Here, the Remmeys to a great extent maintained craft traditions.

The Remmeys either designed their own products or received specifications from customers. Designs had to be transformed into models for mold construction. To create models, the Remmeys employed potters, wood pattern makers and machinists. Mold makers were also hired. The above positions required great skills and the Remmeys developed formal apprenticeship programs to train young men in these trades. When necessary they also hired skilled people from the outside. In fact, between 1910 and 1950, the firm recruited master potters from England to work as ceramic models makers and to train apprenticed potters. The trans-Atlantic transfer of skills is noteworthy for the firm (as it was for many other manufacturing concerns operating in the Philadelphia area).[3]

No formal training or apprenticeship programs were established for other workers. Production workers -- whose numbers grew to near seventy-five by World War II -- were trained on the job by foremen or the plant superintendent who controlled most personnel matters (a high school diploma was never required of production workers at Remmey and they apparently were unable to transfer into the training programs established for model and mold makers). The Remmeys, in fact, never developed an elaborate system personnel relations. They operated the plant on a family-firm basis (until 1957, four grandchildren of Robert Clinton Remmey managed the company; in that year they merged the business with the A. P. Green Fire Brick Company and the consolidated enterprise was subsequently purchased by the U.S. Gypsum Company in 1968). The Remmeys knew workers in the factory by first name, offered them steady employment at good compensation, and provided certain benefits -- such as vacations, special gifts, payment of medical costs in accident cases, pensions, etc.-- on a generous but unsystematic basis. They were never faced with the threat of unionization. The company of Robert C. Remmey Sons Company is of interest, because it offers an almost classic case study of changes from craft to industrial production (with the retention of certain traditions); in terms of personnel matters, on the other hand, the Remmey story is not one of innovation and is less noteworthy on this issue.

Footnotes

[1] This case study is based on an interview with John Remmey, former president of the company, on June 14, 1980 and on printed articles supplied by him which are listed below.

[2] The basic business and production history of the firm can be found in the following articles suppled by John Remmey: W. Oakley Raymond, "Remmey Family: American Potters," Antiques (June 1937): 296-297; W. Oakley Raymond, "Remmey Family: American Potters, Part II," Antiques (September 1937): 132-134; "Laboratory Control and Flexible Operation Allow Wide Variety of Refractions," Brick & Clay Record (August 1940): 44-46; "Remmey Refractories," The Nor'easter (February 1943): 7-3; "The Remmeys and the Refractory Industry", Reading Railroad Magazine (no date indicated): 10-11, 24.

[3] Interview with John Remmey, June 14, 1980.

The Christian Schmidt Brewing Company[1]

Schmidt's Brewery was founded in Philadelphia in the year 1860 by Christian Schmidt, a German immigrant from Wurtemberg, who had been a brewmaster in his native country. Little is known about the firm's early history, although apparently Schmidt's was well established by 1900 and able to absorb several of its competitors in the city. Brewing was an important industry in Philadelphia with upwards of sixty breweries in operation in the late nineteenth century. Through failure and consolidation the number of companies has progressively declined to the point where Schmidt's notably represents the lone survivor, the only manufacturer of beer operating in Philadelphia today. Until 1976, the firm also remained completely owned and managed by the Schmidt family.

The production of beer at Schmidt's has remained basically unchanged over the course of the last 120 years. Barley malt and corn brought in by rail cars have been cooked separately in water (Schmidt's has always used Philadelphia city water), then combined and strained; hops has been added to the resultant wort for taste; the wort has been cooked and cooled with yeast then added and the resultant beer left to ferment in cooling vats for upwards of three to four weeks before packaging. Change in production has taken the following forms: Schmidt's has experimented with new ingredients, especially in diversifying its product line; testing and tasting procedures in the laboratories have been perfected; wooden cookers and vats have largely been replaced by steel and fiberglass vessels (which has led to the phasing out of a substantial coopers' works at the plant); mechanical vat cleaners have been adopted (as a result, fewer "hands" and "boys" are now employed) and the flow of the product is more mechanically and remotely regulated, although the pace of production is still controlled to a large extent by brewmasters and their estimation of the product's readiness for further processing (to maintain control over quality Schmidt's has deliberately not followed the lead the major beer producers in fully automating).

While the basic production process has not undergone large scale change, packaging represents one phase of operations which has become completely mechanized and automated in the last thirty years. Through the 1940s the largest percentage of employees at Schmidt's worked in packing (especially during peak sales periods when large numbers of part-timers were taken on). Today hundreds of thousand of cans and bottles of beer are cleaned, filled, capped, pasteurized, wrapped, boxed in bulk, and stored without the touch of human hands. The packing plant is run by a small team of supervisors, machine and dial watchers, machine fixers, and fork lift operators.

Since the turn of the century Schmidt's has also operated as a closed union shop and unionization has had a singular influence on personnel matters at the company. Brewers and packers have been organized under the aegis of the Brew Workers Union of America, while a sizable maintenance staff is represented by various craft unions, most notably the International Association of Machinists. All the unions involved have had a strong base and hold at Schmidt's and in the brewing industry in general in most parts of the country.

The significance of unionization at Schmidt's can be illustrated in many ways. All hiring of non-office and non-supervisory staff takes place through union hiring halls and on the basis of union lists (this system has been intact since the early 1900s). A personnel office was established at the plant after World War II when the company began to expand its market and sales force, but the personnel department only handles employment matters of non-union white collar workers. A person seeking a position in brewing, packing or maintenance is advised to apply at the various unions involved for a union card and a place on the union hiring lists. Management has the right to reject men sent by the unions but in practice this prerogative is rarely exercized.

A partially formal understanding has existed between the unions and the firm on recruitment. The unions traditionally have favored relatives of union members for membership privileges and hiring opportunities. The firm in turn has over the years favored and encouraged the employment of family networks. This understanding and arrangement is actually written into union contracts in clauses which place relatives of employees in positions for prime consideration for jobs. As a result of both formal and informal practices, generations of families have worked at Schmidt's and the work force to this day is distinctly German and Irish in ethnic background. Few blacks and no women can be found working in the plant; women dominate in non-union clerical positions in the office (the firm also once hired workers primarily from the immediate neighborhood; today second and third generation Schmidt employees travel in from the suburbs).

The powerful role of the unions can also be seen in the history of apprenticeship and training programs at Schmidt's. The company has never had an on-going, extensive training program for non-salaried workers and this has been mainly at the insistence of the unions. In an industry with constant plant closings and job losses, the unions for the last fifty years have fought to protect the security of the already employed and limited efforts to bring in apprentices. Small apprenticeship programs exist under union contract in brewing, packaging and maintenance, but they involve only a few young men at any given moment and are strictly controlled by the unions involved. Normally these apprentices, who have largely been relatives of employees, are assigned to skilled workers for fixed periods to learn their respective trades and tasks; the company holds no classes, nor does it send young recruits for further training in outside institutions (a high school diploma is still not required for blue collar employment at Schmidt's).

An entirely different system exists for salaried workers. Here the company has established formal training programs. For example, a brewer chosen by the company to be promoted to brewmaster automatically becomes a salaried employee not covered by union contract (this kind of promotion is also not regulated by the union and the firm has sole discretion over such appointments; promotions from apprentice to brewer and then within various grades of the latter position are structured by contract). Brewers selected to be brewmasters attend formal seminars within the firm and have been sent to special trade schools for six month training courses at company expense. Schmidt's holds additional classes for trained brewmasters and requires them to attend special institutes and conventions.

A similar arrangement exists in packaging. The company has a special supervisory training program for those elevated to salaried posts and for new overseers brought in from the outside. The company has made a practice in the last thirty years of recruiting Drexel College students and graduates for packaging supervisory training courses. Similarly, on site seminars are held for sales people and office managers. Deliberate training efforts by the company are thus a matter affecting only salaried workers and here the unions have played a definite role in limiting initiatives for wage workers.

Finally, the union's hold has also influenced the firm's attitudes and practices on conditions of work and benefits. Wages, hours, work assignments, vacations, promotions, seniority rights, pensions, safety measures, and medical and life insurance have been initiated and regulated through contract. Schmidt's, although a family-run firm until very recently, has been notably free of paternalistic efforts on the part of management. The company has never organized company picnics or Christmas parties for wage workers, never sponsored a company paper, chorus or band, never established a savings or loan association -- not even during the high time of paternalistic programs, the 1920s; a Schmidt's bowling league does exist. The company does offer, however, a variety of fringe programs for its salaried employees (a bonus system, a tuition refund plan and an annual dinner, for instance -- most salaried workers do not yet have dental insurance, a benefit gained by unionized workers twenty years ago). Obviously, unionization and rule by contract has eliminated any impetus toward paternalism.

Still, Schmidt's does boast the loyalty of its employees and managers can point to very low rates of turnover. The company is considered a good firm to work for and that is greatly due to the Schmidt family's willingness to deal with the strong, cohesive unions that have been a fixture in the plant and a fixture in the community of brewery workers (social activities are a function of the unions and not the firm). Loyalty to the company, in a sense, has been engendered by honorably recognizing and negotiating with a family that already existed and need not have been forged -- a family of relatives, neighbors, and ethnic kinsmen, a family consciously formed and formed conscious through unionization.

Footnotes

[1] This case study is based on extensive interviews with William Hipp, Vice President of Production at Schmidt's Brewery. Mr. Hipp's grandfather and father worked as brewmasters at Schmidt's, a position he also occupied before promotion to general plant manager. Mr. Hipp permitted the author access to various company papers, including union contracts and several unpublished company histories.

THE JOHN B. STETSON HAT COMPANY[1]

John B. Stetson founded the Stetson Hat Company in Philadelphia in 1865. He was the son of a successful hat manufacturer who died in bankruptcy after making poor investment decisions during his retirement. John's older brothers tried to revive the business, but failed. John then left Philadelphia and wandered the country for a number of years occupying odd jobs. In 1865 he returned to his native city and with $100 in savings bought tools, rented a room and went into the business of making felt hats.[2]

Hat making was an extremely competitive industry at the time and Stetson at first faced great difficulty meeting expenses. In the late 1860s he decided on an experiment: to use the finest fur materials to make a variety of light weight hats. Rather then compete in a standardized market with a standard product, Stetson banked on the idea of creating a varied, specialized product line. To make his hats more distinct, Stetson also decided to box them in specially made packages to be adorned with what became the famous Stetson logo and design.[3]

Stetson sent samples of his new hats to retailers in the west and before long orders poured in as his gamble succeeded. In the 1870s he sought larger quarters and in the interests of economy purchased land and built a factory at Fourth Street and Mongtomery Avenue which was then three miles from Philadelphia's central business district (the area would become Philadelphia's industrial center by the 1900s and the city's industrial wasteland by the 1960s). Successive additions to the original plant created a twenty-five building complex with thirty-two acres of floor space by the mid-1920s. A huge clock tower built at the turn of the twentieth century became the factory's landmark and a tourist and architectural attraction (the tower, the only remaining structure of the firm by the late 1970s recently succumbed to vandalism and arson leaving no trace of the company's place in the neighborhood and the city).

Between 1880 and the mid-1920s, Stetson's firm experienced tremendous growth. The company was incorporated in 1892; it grew to employ more than 5,000 people by the end of World War I and by 1925, the Montgomery Avenue and Fourth Street factory was producing close to one quarter of all felt hats manufactured in America (close to a quarter of the dollar value of all hats as well).[4] Stetson by then had sales offices in all parts of the country and in Europe and the Stetson hat had an international reputation.

Stetson built and the corporation maintained a fully integrated factory, which was unique for the trade. On the premises all aspects of production were conducted, including the manufacture of Stetson Hat labels and boxes (such work was usually contracted to outside firms). Fur felt was prepared, cleaned, dyed, cut, sized, shaped, sewn, trimmed, and finished within the walls of the plant. Since Stetson aimed at a custom market, much of the work involved hand labor (only in the 1930s were important processes mechanized), and the work force at the factory was comprised of semi-skilled and skilled workers. Generally, less skilled and largely female labor was employed in preparation and finishing, while men attended to the cutting, sewing and shaping of the hats.

Extremely high labor costs and a tradition of independence among hat makers forced Stetson to pay great attention to employee relations in the firm.[5] His approach was basically paternalistic as the company initiated an endless stream of welfare programs to engender loyalty and diligence. Besides establishing a departmentalized system of management with overseers for each function, the firm did not develop any structural or bureaucratic methods of labor controls (at least before the 1930s).

By the 1920s, however, Stetson Hat had become famous for its various employee programs. By that time the managers of the firm had created no less than the following: a cooperative store where foodstuffs could be bought at wholesale prices, language and civics courses, especially for foreign born employees, group life insurance plans, a quarter century club for veteran workers, a building loan association, an employees' savings bank, a Stetson chorus (which performed on the radio), Stetson baseball and track teams (competing with other firms), a hospital and dental clinic, a week-end lodge for workers, a profit sharing plan, a Sunday School, and a host of bonus and premium systems.[6]

A yearly Christmas party had also become an institution at which prizes, usually turkeys and hats, were awarded to deserving employees. While alive, John B. Stetson was also known to visit disabled or sick Stetson men and women and to personally offer his condolences to families of deceased workers.

Corporate paternalism proved an effective strategy at Stetson's. The firm was known as "family" or neighborhood firm, and when the Quarter Century club was created, 307 workers on payroll were actually eligible for membership on the basis of their twenty-five years or more of service to the company.[7] Little evidence of organized labor protest, in fact, exists for the early years (unions were a definite anathema for Stetson).

Relations and feelings changed after 1930 with the collapse of the economy. Orders for felt hats fell drastically during the depression and the firm was hard pressed to return a profit to investors. Immediate efforts were made to cut costs, especially outlays on labor. Workers were furloughed; more important, the managers of the firm hired time-and-motion consultants to define new tasks and piece rates; steps were also taken to mechanize various parts of the production process.[8] Workers in the factory reacted to these measures by forming an independent union in 1933. Although bargaining with company officials began, the union failed to have its demands accepted. In 1936, the union then joined the United Hatters, Cap and Millinary Workers International Union, an affiliate of the AF of L, headed by Max Zaritsky.[9]

In December of 1936 the new local submitted a long list of demands to Stetson's managers; their immediate dismissal provoked an immediate strike with more than two-thirds of the Stetson work force walking off their jobs. Within one week, the firm capitulated, recognizing the union as a rightful bargaining agent and agreeing to a contract which among other benefits, provided for a 5 percent wage increase, a forty hour week, overtime compensation, abolition of time and motion studies and piece rates, and establishment of grievance procedures and seniority rights. Contracts reached in subsequent years added to existing measures and also further institutionalized existing welfare programs (e.g., a Blue Cross and Blue Shield plan was introduced which replaced the company hospital where medical assistance had been dispensed on a more discretionary basis).[10] The contract, in this way, put an end to paternalistic efforts, although the depression itself had forced the firm to dispense with many of its benevolent offerings for economic reasons.

Union recognition and contractural agreements also pressured the firm to find new structural means of labor control. Mechanization continued, but more important, deliberate efforts were made to improve supervision (the costs of the contract had to be extracted through increased productivity and more effective overseeing was deemed as the best solution). The firm first established training and incentive programs for foremen; although Stetson throughout its history had maintained an apprentice system for skilled positions, the training school founded in 1937 for supervisors represented the first deliberate attempt by firm managers to attend to the education of its labor force.[11] Second, an Industrial Relations Department was established to set labor policy, bargain with the union, act in the arbitration of grievances, and also to control hiring. Foremen now submitted information on openings to the IRD which then advertized and interviewed recruits (line supervisors participated in decisions on hiring but had no unilateral powers as before).[12] Finally, the Industrial Relations Department also handled all disciplinary matters.

The Stetson Hat Company maintained its presence in Philadelphia through the 1960s. The firm was eventually purchased by a large company and a decison was made to close the erstwhile facility on Montgomery and Fourth (vandals have done the rest). Stetson provides a good example of the limits of corporate paternalism and the role played by labor strife and union contracts in spurring the growth of bureaucratic and organizational kind of labor controls.

Footnotes

[1] This case study is based primarily on the following monograph: Edward Pry, "Analysis of Employer-Employee Relations in the John B. Stetson Company" (unpublished M.A. Thesis, University of Pennsylvania, 1941).

[2] Pry, pp. 2-4.

[3] Ibid., pp. 4-7.

[4] Ibid., p. 10.

[5] Ibid., pp. 13-15.

[6] Ibid., pp. 15-25;"'Employee Relations' of the John B. Stetson Company," National Association of Corporation Schools Bulletin, 12 (December 1917), pp. 22-25.

[7] Pry, p. 19.

[8] Ibid., pp. 27-29.

[9] Ibid., pp. 29-31.

[10] Ibid., p. 40.

[11] Ibid., pp. 31, 47-48.

[12] Ibid., p. 44.

H. SWOBODA & SON, INC.[1]

In 1852 Henry Swoboda, a German tanner, emigrated to Philadelphia and established a small tanning business on Third Street near Market. There he treated horse and cow hides purchased from local butchers. His business remained small with local customers until he received an order for leather from the A. G. Spaulding Company of Chicopee, Massachusetts, a firm beginning to prosper as a supplier of baseballs to amateur and professional baseball teams. That proved a fortuitous order: for not only did it mark the beginnings of growth and prosperity for the company, but ever since the leather business of H. Swoboda & Sons, Inc. has been tied to the needs of baseball and other sports (the firm remains the major supplier of coverings for baseballs used by both the American and National Leagues to this day).

Henry Swoboda died in 1895 and his sons continued his initiatives in manufacturing leather for customers with specialized requirements. They began to cure horsehides for baseball gloves, industrial work gloves, specialty shoe soles (e.g., ballet slippers) and custom apparels. While the firm still treats cow hides, it has gradually become one of the world's largest tanners of genuine horsehides. The Swoboda family also remained principal stockholders and active in management until the early 1960s when the company was sold and made a division of Trans-Continental Leathers, Incorporated.

Leathers have been prepared at Swoboda in the following fashion since Henry Swoboda's time. Perishable hides purchased from suppliers arrive at the factory lightly salted. They are then cut into smaller pieces and placed in vats of lime liquor which removes all hair. The hides are then "fleshed" with all fat and tallow removed and "tanned" (chemically treated with chrome salts to render them non-perishable). The leathers are subsequently dried, further cut, dyed, dried again, finished, measured, and shipped.

It is unclear whether Henry Swoboda operated his small workshop under craft conditions with apprentices and journeymen. By 1900, however, H. Swoboda & Sons was definitely an industrial firm with hired wage workers and a marked division of labor. The company also gradually mechanized operations, first with mechanical cutters and lifting machines and then with mechanical drums (no one period can be isolated as a critical time for mechanization and market demand appears to have been the prime inducement).

Skilled hand labor, however, still remained important because of the specialty leather produced and the need to carefully control and if need be intervene in the cutting, fleshing and tanning processes. The company has recently begun to manufacture greater amounts of course and standard leathers and here the firm managers have innovated with automated, through-process technologies.

The work of the plant before and after mechanization can only be described as arduous and hazardous. Noxious gases and chemical burns made leather making a fairly undesirable occupation. Common day laborers have been involved in sorting, lifting, and transporting tasks while initial cutting and fleshing require skills which have been taught and learned on the job (the company has had no formal apprentice or training programs and a high school diploma is still not required for employment). Plant workers have also comprised a declining proportion of the total work force; since the 1920s the sales and clerical staffs have vastly expanded.

In the early years the Swoboda family primarily hired workers of German extraction. As the population of the neighborhood surrounding the factory has changed, so has the ethnic composition of the work force; today blacks compose the largest percentage of blue collar employees. Hiring apparently remained in Henry Swoboda's hands until a large, permanent factory was built in the early 1890s; a factory superintendent then assumed control over labor affairs. A personnel office was not created until the early 1940s. This occured after workers in the plant successfully established a CIO union during the late thirties, but the relationship between the two events is unclear. Also unclear is the effect unionization has had on work relations and experiences in the company. Union-managements contracts established set wage and hour schedules, grievance procedures, seniority rights (and eventually a variety of fringe benefits); but the firm has not developed notable internal labor mechanisms or innovations to engender discipline or loyalty. Turnover, for example, has always been high at the company, and officials have not deliberately sought to change matters. In fact, Swoboda

& Sons offers a kind of negative case study. Perhaps because of the undesirable nature of the work, firm owners and managers have not been seriously forced to consider personnel matters as a singular concern. Supplies of hides and customers remain the most rivetting and constant issues that occupy their time. There are no records to indicate that matters were any different a hundred years ago.

FOOTNOTES

[1] This case study is based on interviews with George Kallish manager of Swoboda & Sons for Trans-continental Leather, Inc., and a small file of historical papers and items kept in a vault in Mr. Kallish's office (including a typewritten history of the firm prepared twenty years ago; no author listed).

John Wanamaker's[1]

John Wanamaker was born outside of Philadelphia in 1838. As a young boy he attended grade school for two years and at the age of nine began working as a brickmaker's helper. Holding odd jobs through his teens, he accumulated sufficient savings to start his own business in his early twenties.[2]

In 1861 Wanamaker and his brother-in-law, Nathan Brown, opened a small clothing store in an office building on Sixth and Market Streets. They sold ready-made and custom designed men's and boy's clothing and employed two tailors who doubled as salesmen and a delivery boy. From these small beginnings would grow one of the world's major retail emporiums.

Nathan Brown died in 1868 and Wanamaker as sole owner and manager of the store began to enlarge the business. Within a year he opened another retail outlet which carried both men's and women's ready-made clothes as well as imported fabrics, hats, shoes, and silk and linen accessories. Wanamaker believed his success would lie in product diversification and horizontal expansion. Success came quickly for in 1871 the Wanamaker stores sold more than $2 million worth of goods and his staff had grown to 133 employees.

In 1875 Wanamaker purchased the old depot of the Pennsylvania Railroad at Thirteenth and Market Streets with an eye to building a large single store. He originally envisioned that the shed would house a number of small specialty shops, independently owned and operated (Wanamaker would serve as the basic developer and renter), but he met formidable opposition from local merchants who were

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wary of losing their autonomy. Instead, he was forced to create his own multi-departmental retail outlet.

On opening day in May of 1876, 70,000 people flocked to the Grand Depot as it was called, and wandered through several city-block's worth of counter and floor displays, mainly of clothing, fabrics, and soft goods accessories. They were serviced by 654 Wanamaker employees. The Depot became a major attraction for visitors to the World's Fair, held in Philadelphia that summer, and a favorite tourist spot thereafter.

The following years saw vast expansion of the original emporium. In 1877 Wanamaker opened a book store and a restaurant at the Depot; a children's clothing section and a formal China department made their appearances in 1878; a "bargain room" was begun in 1880 as was furniture, sporting goods, carpet, and jewelry departments. 1881 witnessed the addition of an antique furniture and art gallery and an optical wear area. In 1882 the Grand Depot boasted a new soda fountain, lunch counter and candy store; in 1884, an information bureau and post office were installed. The goods carried in the store by the mid-1880s came from all parts of the world and by the early 1890s, Wanamaker had established purchasing offices in the major capitals of Europe.

Wanamaker also added other conveniences. His was the first grand retailing palace to have elevator service, free rest rooms, electric lights, and music. He pioneered in the establishment of the solid one-price system (reducing the skills of salesmen who by tradition had haggled with customers) and with money-back guarantees for dissatisfied patrons, charge accounts, and the "no-obligation-to-buy-just-come-and-visit" attitude (equally important, was Wanamaker's attention to advertising, both in newspapers and through private distribution; by 1896 he was spending more than $1 million per year on advertising and the company boasted a special library for students interested in what Wanamaker called "scientific advertising").

By the late nineteenth century the business was outgrowing its quarters in Philadelphia's now burgeoning center city business district (Wanamaker had already opened a second large store in New York City in 1896); more land near the depot was purchased and in 1902 ground was broken for the construction of a multi-story building which was completed in 1911 (that store remains the firm's flagship store to this day). Wanamaker then employed 12,000 people in his New York and Philadelphia outlets.

Throughout his lifetime Wanamaker devoted personal attention to the management of his firm and its ever growing work force. Wanamaker divided the administration of the store departmentally. As early as 1881 he had appointed forty-six department heads to oversee purchasing and sales of different product lines (each department official had his own administrative staff). With further diversification, more departments were created, but the late nineteenth century was noteworthy for expansion of non-sales offices -- departments were thus created for advertising, bookkeeping, personnel, delivery, mail-orders, laundry, maintenance, receiving, restaurants, the print shop and new candy, perfume and furniture factories. By 1920 top management of the firm had grown to comprise close to three hundred people.

Wanamaker at first attended directly to the hiring of his managerial staff. He recruited within Philadelphia's merchant community, looking especially for men who had failed or were failing in their respective businesses. Wanamaker offered them good salaries, guaranteed employment, and a great deal of freedom.[4] His departmentalized structure was deliberately run and best run on the basis of highly decentralized authority. In the twentieth century, the firm developed internal managerial training programs as promotion from within the firm became a favored practice (or at least from within the training programs themselves to which college graduates were also invited to apply).

Recruitment of non-supervisory personnel was handled almost from the start from a centralized personnel office (the exact date of its establishment is difficult to ascertain).[5] This department accepted applications, interviewed recruits and eventually tested them. Aptitude and personality tests were a fixed part of personnel procedures by the 1920s (personality tests were used to place salespeople in particular with what was deemed as appropriate products for them to sell).

In the late nineteenth and early twentieth centuries the largest component of the work force was in sales (clerical workers in the office began to be a growing percentage of total employment in the 1920s). Strict standards were established for the hiring of sales employees. Traditionally sales clerks in small retail outlets had been men. Wanamaker immediately began hiring women for all sales positions with the exception of men's clothing, furniture and eventually appliances. Women were preferred who came from respectable homes, showed grace and decorum in interviews, dressed well, and most important, spoke English. White Anglo-Saxon Protestant and later Irish Catholic young women came to dominate in jobs having direct contact with customers. Black men were hired to run elevators and in certain low-level maintenance positions; southern and eastern European immigrants could be found behind the scenes working in stockrooms, warehouses and in shipping. By 1920 a commercial high school degree was a prerequisite for office clerical posts and as a result the ethnic composition of the office areas mirrored the sales floors. Ethnic segmentation of the work force at Wamamakers remained fairly distinct through World War II.

Through training programs and promotion policies the firm developed bureaucratic means of engendering diligence. But more deliberate efforts to instill loyalty were made through very deliberate benevolent practices. Wanamaker spoke of his workers as "my store family." He felt strongly that he owed his workers more than a wage and that the store should function as a home away from home.[6] He thus became an early champion of business paternalistic programs on behalf of workers.

Education figured prominently in Wanamaker's plans, particularly for younger employees.[7] In 1878 regular classes were established in the store to teach new recruits methods of salesmanship, mathematics, ethics, and public speaking. A lecture series for older employees was also created. In 1890 a store "school" was formed with full-time teachers and a principal; boys and girls went to classes from eight to ten in the morning before attending to their jobs. The school had a definite military air. Students wore uniforms and were called cadets. Wamamaker supplied these uniforms free of charge as well as drilling equipment and musical instruments for the formation of marching bands (a special battalion of Wanamaker workers served, it should be noted, in the Spanish-American War). Physical training was also stressed and parades were a fixture of school activity.

On March 12, 1896, the store school officially became known as the John Wanamaker Commercial Institute, and on December 10, 1908 the Commonwealth of Pennsylvania granted a charter for the American University of Trade and Applied Commerce to perpetuate the work of the Institute. Wanamaker had clear ends in mind for his school. As he noted, the school was planned so that "the United States shall reap a harvest of healthy, educated, contented men and women, fit for conditions peaceful and prosperous, instead of leaving them to socialist anarchies, ignorance and poverty that breed discontent and crimes."[8]

At its peak the school enrolled three hundred young men and women (in separated classes) and had twenty-four teachers on staff. Courses were given in reading, writing, math, English, spelling, stenography, commercial geography, commercial law, music, French and German, and business methods; a summer camp was also established for participants in the Institute. Students received grades for their course work and these grades determined prospects for promotion within the store. The store school was gradually phased out in the 1920s; with the passage of compulsory school attendance laws, Wanamaker's successors in particular found it unnecessary to provide a basic grade and high school education for their new recruits. In-store vocational training programs for sales and office clerks, buyers, and department heads and staff, however, remained basic components of the work experience at the store.[9]

John Wanamaker until his death in 1922 also constantly experimented with other kinds of benefit programs for his workers in the name of building harmony within the ranks.[10] Before the Grand Depot was even conceived, Wanamaker had abolished overtime work for his employees and established the principle of the ten hour day. In 1876 the first year of the new store, a system of one-week vacations with pay was instituted for all workers with more than six months of service. Wanamaker was an early leader in making Saturdays a half day of work; in 1888 the store began closing at one o'clock in the afternoon. In 1906 he opened a medical dispensary for his "store family" which was staffed by a full-time doctor and dentist and a team of nurses. Programs for hygiene and injury prevention were created and a physical examination was made a requirement for employment. Savings and loan associations, life insurance and eventually pension plans were also made available.

A host of recreational programs additionally were implemented. Wanamaker built tennis courts on top of his new store for his employees and opened an athletic field for them on the banks of the Schuylkill River. A number of clubs were started; he even formed a women's group for the discussion of women's issues and problems. His reputation as a leader in corporate welfare capitalist initiatives was well deserved. Equally well deserved was his reputation as vehement opponent of trade unions. Until the 1950s, Wanamaker's was the only large retailer in Philadelphia completely untouched by trade union organizing efforts.

Wanamaker's is of interest because it provides an example of a firm that established labor control through both deliberate bureaucratic and paternalistic means (in fact, the company played a leading role inasmuch within the American business community at large). Equally interesting is the continued concern store managers had for the education of their employees. Wanamaker's offers evidence that prior schooling and on-the-job training were of particular importance to large firms hiring large proportions of white collar workers. Formal education developed social, personal as well as technical skills deemed critical to the efficient operation of the enterprise.

Footnotes

[1] The author was denied access to the archives of the Wanamaker firm. This case study is based on primary and secondary printed sources listed below.

[2] The following two extensive biographies provide a wealth of information on Wanamaker and his store; Herbert Adams Gibbons, John Wanamaker (New York, 1926, 2 volumes); Joseph Appel, The Business Biography of John Wanamaker (New York, 1930).

[3] Gibbons, Volume I, p. 219; Franklin Mason Barnes, "Time and Motion Study and Its Application to the Non-Selling Departments of Department Stores"(unpublished MBA thesis, The Wharton School, University of Pennsylvania, 1932), pp. 61-63.

[4] Gibbons, Volume I, p. 168.

[5] On hiring procedures, see Gibbons, Volume II, pp. 261-264; Barnes, pp. 61-63.

[6] Appel, p. 371.

[7] On Wanamaker's interest in education and school programs for the store, see ibid, pp. 428-430; Gibbons, Volume II, pp. 284-285; John Wanamaker, "The John Wanamaker Commercial Institute -- A Store School," The Annals of the American Academy of Political and Social Science, 33 (1909): 151-154.

[8] Quoted in Appel, p. 434.

[9] Donald Freud, "A Critical Analysis of Methods Employed by the 'Big Five' Philadelphia Department Stores in Recruiting, Selecting, Training, and Evaluating the Performance of Their

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Sales Trainers" (unpublished MBA thesis, The Wharton School, University of Pennsylvania, 1955), pp. 71-100.

[10] Gibbons, Volume II, pp. 272-279.

[11] Herman Stern, "The Present Union-Management Relationship in Philadelphia Central City Department Stores" (unpublished MBA thesis, The Wharton School, 1943), pp. 33-35.

The Wetherill Paint Company[1]

Samuel Wetherill was born in Burlington, New Jersey in 1736 and at the age of fifteen moved to Philadelphia where he became apprenticed to a housebuilder. He later plied a trade as a carpenter, helped establish one of Philadelphia's first textile mills, and in 1784 opened a retail store where he sold imported iron mongery, window glass, hardware, painters' colors, drugs, dye stuffs, and clothe. Wetherill was an active Quaker, patriot and a public advocate and promoter of domestic manufactory.[2]

In the late 1780s Wetherill expanded his business activities beyond retailing. In his store he began to produce dye colors, mix remedies and grind paint lead. In 1800 he decided to go directly into the manufacture of white lead for paint and in 1804 built a separate small facility to improve output. Increased demand for paint and Wetherill's staunch belief in ending the new republic's dependence on imported products served as the impetus for his move toward concentration on manufacture. In 1810 he built a larger paint lead plant and his business prospered with the cut off of imports during the War of 1812. To insure an adequate supply of raw materials, Wetherill bought a pig lead farm in 1813 in Montgomery County, Pennsylvania.

In 1816 Samuel Wetherill died and his sons inherited the business. They gradually expanded the firm, establishing an oil vitriol works, a lead pipe factory and a chemical labratory. In 1848 a large facility was constructed on the west banks of the Schuykill River between Chestnut and Walnut Streets where the varied activities of Wetherill & Brothers were conglomerated. Production came to center

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on the manufacture of ground white lead for paints. In the 1850s the original store was closed as the company came to rely on a network of commission agents to market Wetherill white lead which garnered a reputation as a high quality product.[3]

Wetherill & Brothers remained in business producing paint leads at the Schuykill plant until 1933, when for a variety of reasons, most notably the depression, the company sold to a larger firm which discontinued operations there. The enterprise founded by Samuel Wetherill in the late eighteenth century forms a classic case in the history of American business enterprise. Quaker entrepreneurialism, the transfer of commercial to industrial capital, the impact of trade embargos and the process of vertical integration are all exemplified.

Wetherill & Brothers produced white paint lead for 133 years and during that period the production process was barely changed. The failure of later generations of Wetherills, in fact, to innovate or diversify contributed to the company's ultimate demise. The firm never manufactured fully prepared paints to take advantage of new consumer markets; the same engine that was placed in the main factory in 1848 was still in use in the mid-1920s.

White lead was produced in the following fashion by the Wetherills. Molten pig lead was poured into sheets; the sheets were then shaped into rolls and placed into pots containing chemicals to force corrosion. The pots were then stacked on shelves between layers of manure and left undisturbed for periods of six weeks to three months. The chemical and heat effects corroded and pulverized the lead. The powdered lead was then further ground and placed in kegs for sale. Over the years the Wetherills experimented with different kinds of pig lead, kiln procedures, chemicals and stacking techniques, but the basic process remained unchanged.

Between 1848 and 1913, the work of the factory was supervised by one plant superintendent. Before 1840, when the various activities of the company were dispersed, the Wetherills divided responsibilities and took a direct hand in supervision of production. In the main factory they attended more to purchasing, sales and other office matters, leaving direction of the actual work to superintendents. In 1913 a safety engineer was hired to oversee technical aspects of production and to maintain procedures recommended by the firm's insurance carriers; a plant foreman continued to direct the labors of the men employed. The practical nature of the Wetherills is revealed in one of the only surviving memoranda pertaining to administration. On establishing criteria for the selection of foremen, William H. Wetherill in 1885 issued the following policy statement:

> What is wanted in a foreman, is a man of energy, punctuality, business habits and power of dealing with men; all of which things are not to be got out of books or labratory (sic) work.
>
> These qualifications are the most essential qualifications in a foreman and what you want besides in such a man, is not book-learning but to deal with new conditions, and an amount of knowledge sufficient to enable him to know where to go to find more, if he wants it.[4]

Between 1848 and the early 1880s, the practical men hired by the Wetherills to direct operations supervised a task force which averaged between twenty-five and thirty men in any given year.

After 1885 production at the Schuylkill plant was increased and the labor force grew by the late 1890s to average seventy to seventy-five employees. Judging by the names appearing in surviving payroll books, the firm hired largely Irish workers until 1890 when names of Germanic origin appear in the rolls. There were no women workers in the factory itself, although women worked in the offices as secretaries and clerks. Since there were few groups of similarly surnamed employees, it can be assumed that the company did not deliberately hire family-based teams of workers.[5]

The only other socio-demographic feature that can be determined about the work force at Wetherill is literacy. About half the men employed could write their names clearly on payroll vouchers; the other half either wrote poorly, spelled their names differently from week to week or noted their acceptance of pay merely with an X (the latter only included three or four men when the firm employed twenty-five to thirty on an average). More skilled workers signed their names distinctly in all cases. As to skill, the Wetherill labor force can only be described as unskilled. With the exception of two casters, one kiln man, a carpenter and a plumber, the employees of Wetherill were common laborers. Evidence indicates that men worked in groups at filling and shelving pots and in grinding lead and were able to substitute for each other in all phases of the work. A deliberate division of labor was never effected at Wetherill; nor were apprentice or training programs established (although two "boy helpers" -- semi-apprentices -- assisted the skilled casters).[6]

The most noteworthy feature of the work force at Wetherill was turnover, rates of which can only be termed staggering. Between 1848 and 1896 the firm hired 3,673 different individuals; of them, only twenty-nine remained with the company for more than ten years. Two-fifths of the total employed stayed less than a week with company, many of them no more than a day. Turnover rates reached levels of 400 and 500 percent in the 1880s and 1890s. In the year 1890, for example, Wetherill & Brothers had on the rolls on any given day an average of fifty-five workers; during that year 303 men entered into hire in the firm. Turnover, additionally, increased during the course of the century. In 1848 a third of the labor force worked at least forty-eight weeks during the year; by the 1890s, such "full-timers" represented 10 percent of the totals. The turnover statistics are all the more remarkable because the company offered steady work. Seasonality was not a factor at Wetherill and the plant remained in operation with few exceptions on a full year basis throughout its history.[7]

Excessive turnover at Wetherill & Brothers can be accounted for in several ways. First, and most important, the work was arduous, hazardous and disagreeable. The heat of the kilns, the the constant lifting of pots and stacking and layering, the strong fumes of the chemical corrosion process, the high temperatures near the pot stacks, and the dust in the drying and grinding rooms made for extremely poor working conditions. Health records from the 1913-1933 period reveal high incidence of lacerations, fractures, burns, and what the company defined as "colic" (probably stomach and lung disorders caused by the ingestion of lead dust).

Disciplinary discharges may have also contributed to high turnover rates. Two men, for example, are listed in the payrolls as discharged in August 1882 for strike activity. Here, it may be added that evidence of labor unrest at Wetherill, organized or otherwise, is spotty. Two serious fires in the early 1800s were reported to have been set by disgruntled employees; at least in 1882, the firm also appears to have been faced by strike efforts.

A final cause for turnover can be found in the generally low wages offered by the company. Wetherill & Brothers generally paid common day labor wages for a ten to twelve hour work day (men normally worked six days a week). Only in the 1890s did the firm begin to compensate veteran workers at higher wage rates. Apparently Wetherill lost workers to other Philadelphia paint companies that offered higher monetary rewards.[8]

The owners and managers of Wetherill & Brothers did not develop personnel policies to deal with the problem of turnover. The company paid low wages and working conditions were only improved when the firm was forced to by government regulatory agencies and the firm's insurance carrier. The company offered a few fringe benefits but not in a systematic way: it appears that some veteran workers received paid vacations and sick days; after 1880 a dollar bonus was given at Christmas time to employees who had more than five years tenure, and on one occasion a group of deserving workers were rewarded with cigars. Wetherill & Brothers did not develop career or promotion lines or consider the implementation of medical insurance of pension plans. The inattention to personnel matters, the almost complete absence of any policies suggestive of welfare capitalism, can be accounted for by one simple fact: throughout its history, labor costs at Wetherill & Brothers averaged between 10 and 20 percent of all operating costs.[9] Labor could be treated as a commodity, to be hired, fired and ignored at will.

If labor policies were not deliberately fashioned internal to the firm, labor relations at Wetherill were affected in the twentieth century by two outside agencies. The government had an indirect and direct influence on affairs at the Schuylkill plant. Favorable tariff policies, for example, allowed the firm to operate on a steady basis throughout its 133 years of manufacturing white paint lead; more significantly, the Department of Labor and Industry of the State of Pennsylvania began making factory inspections in 1913 and demanded changes in working conditions on the basis of newly-established state standards; the state agency also had the firm submit weekly medical reports which had to be compiled by a medical doctor now hired by the firm to make physical examinations of Wetherill workers.[10]

The firm's insurance company, the Ocean Accident and Guarantee Corporation of London, also demanded changes in operating procedures at the Schuylkill plant. The carrier recommended inprovement in lighting and ventilation and also forced the company to establish a safety committee which was directed to write and enforce a company safety code. The commitee consisted of eight men, including a newly appointed safety engineer and four employees (it is unclear how the employees were chosen, although throughout its existence only veteran workers served on the board). From available information it appears that working conditions did improve in the last twenty years of the firm's existence.[11]

Wetherill & Brothers ceased operation in 1933, a victim of depression, overcompetition, but more important, of outdated production processes and marketing strategies. The firm's history is exemplative of trends in American business history, but also offers insights to students of industrial relations. The firm had a simple administration structure; for a variety of reasons a division of labor was not effected at the plant and the company relied on untutored and unskilled workers; low labor costs, most significantly, allowed company officials to devote little attention to personnel matters and no internal labor market structures were developed; finally, the Wetherill & Brothers case history illustrates how outside agencies -- such as government and insurance companies -- can affect working conditions and relations within firms.

Footnotes

[1] This case study derives from the papers of the Wetherill Paint Company deposited at the Lippincott Library of the University of Pennsylvania and a previous analysis of those records contained in Miriam Hussey, From Merchants to "Colour Men:" Five Generations of Samuel Wetherill's White Lead Business (Philadelphia 1956).

[2] Hussey, pp. 1-4.

[3] Ibid., pp. 5-24.

[4] "Foreman," Wetherill Time Book, 1882-1889, PR-15, Wetherill Paint Company Papers, Lippincott Library, University of Pennsylvania.

[5] Hussey, p. 95.

[6] Ibid., p. 124.

[7] Ibid., pp. 97-102.

[8] Ibid., pp. 102-109.

[9] Ibid., p. 16.

[10] Medical Records, M-52-ABC, Wetherill Paint Company Papers, Lippincott Library, University of Pennsylvania.

[11] Safety Committee Records, Wetherill Paint Company Papers, Lippincott Library, University of Pennsylvania.

H.C. Wood Incorporated[1]

Aaron Wood, a stonecutter of British descent established a small stonecutting business in Philadelphia in the late 1840s (1849 is the first date that the firm appears in city directories). His business thrived on high demand for finished marble slabs which were traditionally used as front steps by builders of Philadelphia row houses. Wood employed Irish and Scottish stonemasons and the firm was operated under craft traditions with apprentices and journeymen.

After the Civil War, Wood began to specialize in the cutting and carving of marble gravestones. Poured sandstone and cement and wood planks had replaced marble as popular, inexpensive materials for front steps; during and after the Civil War carved marble tombstones had also become voguish and, for the general public, acceptable and affordable. Wood quickly changed his business to take advantage of this new market. Ornamental carving, however, required different procedures and skills than preparing marble for building purposes. As a result, in the 1870s and 1880s Wood began to hire Northern Italian marble carvers to produce custom gravestones. Until the 1960s practically all of the employees of the Wood family firm were of Italian ancestry, with sons of former workers inheriting their fathers' positions in many instances.

Several important changes in ownership, labor relations and production techniques occured at the turn of the twentieth century. Aaron Wood died in 1888 and the firm was incorporated and managed by his sons (the company remains totally in family hands today).

In the 1890s (the exact date is unknown), the second generation of owners and managers signed a contract with the Stone Cutters and Tile Workers Union of the American Federation of Labor. The company there agreed to structure the operations of the business according to union rules. Stone workers were to be hired directly through union lists and apprenticeship was to be limited and controlled (the Woods had sole discretion over the choice of apprentices but in practice they tended to be relatives of workers). Wage and hour scales, seniority rights, and grievance procedures were also established. The particular circumstances under which the union was recognized and a first contract reached are unclear.

The second generation of owners also adopted new techniques of production in the first decades of the century. Sandblasting with stencils replaced handcarving of letters and most ornaments (certain details on gravestones are still hand chiseled today). This greatly reduced but did not eliminate the skills required for the preparation of stones; the new technique did require the additional work of skilled stencil makers. Apparently mechanization was not opposed by the union. The firm agreed to continue recognizing the now deskilled carvers as craft workers -- all rights and benefits remained intact -- while the union did not block necessary changes in rules and staffing or mechanized production itself. Over the years additional compromises have been reached with further technical innovations in cutting and finishing.

H.C. Wood Incorporated offers an example of the ability of craft workers and their unions to structure work relations and procedures. Despite mechanization the employees of the company directly and indirectly have regulated entrance to the firm, training, and to a great extent, their job security. Perhaps because of the nature of the trade, the company has survived and not been threatened by such worker controls.

Footnotes

[1] This case study is based on interviews with Harvard Wood and Harvard C. Wood, Jr., president and vice-president of H.C. Wood Incorporated. There responses were based on memory and their own search of surviving records.

III. Getting and Losing Work in Philadelphia, 1870-1935: An Analysis of a Survey

In the mid-1930s Gladys Palmer and her associates at the Industrial Research Unit of the Wharton School at the University of Pennsylvania released a series of remarkable reports on employment conditions and trends in the city of Philadelphia.[1] The Great Depression of the Thirties served as a backdrop for Palmer's investigations; she was an early advocate and developer of measures to monitor changes in the labor market. Palmer collected information for her studies through interviews, questionaires and direct workplace observations. She published her statistical findings in composite form and historians, such as Sam Bass Warner, have subsequently relied heavily on her figures (her time series constructions, in particular).[2]

Fortunately, transcripts of interviews and completed questionaires for many of Palmer's surveys survive; the individual-level data contained in these materials allow for detailed, disaggregated kinds of analyses not attempted by Palmer or her co-researchers. Questions of interest to social historians on the work experience that are practically impossible to treat through such sources as manuscript population and manufacturing censuses, city directories, tax records, and payrolls can be raised and answered. This paper reports the results of a reworking of information contained in one of Palmer's numerous studies.

In 1936 members of the Industrial Research Unit at the Wharton School interviewed 2,500 workers then employed in four industries in Philadelphia: radio manufacturing, textiles, metal trades, and hosiery. Attention focused on career histories and passage into and out of the labor market. The respondents ranged in age from seventeen to seventy-seven, with the oldest starting work in the early 1870s. Palmer and her staff obtained information from these workers on date and place of birth, sex, race, marital status, length of residence in Philadelphia and the United States, length of schooling, age at leaving school, age starting work together with a detailed occupational history that included job titles, dates of employment and unemployment, reasons for job changes, and methods of securing work.[3] The transition to the working life, schooling and training, strategies for gaining entrance to the labor market, occupational mobility and attainment, employment patterns, and job tenure and loss are major issues that can be systematically assessed with the Palmer data.[4]

Entering the Work Force

Participants in the Palmer survey of 1936 began working at an average age of 15.2 years. Notable variations emerged between different groups of workers. Years of schooling, for instance, proved to be the most important single factor in age of entrance to the job market; as the figures in Table I indicate, the longer young men and women stayed in school, the later they became part of the labor force. Generation also played a role; workers born in the nineteenth century in most instances obtained their first jobs at younger ages than their twentieth century counterparts. Differences in age of entrance to the world of work similarly existed among laboring people of different national origins and by sex (males tended to begin working earlier than females), but the variations here were not marked or conclusive.

TABLE I: Age of Entering the Work Force by Various Factors[5]

	N	Average Age Entering the Work Force	Eta	Level of Significance
Total Population	2498	15.2	-	-
Sex				
Male	1874	15.0		
Female	624	15.5		
			.11	.00
Place of Birth				
Philadelphia	1611	15.3		
Other U.S.A.	265	15.3		
Germany	118	15.0		
Italy	119	14.8		
E. Europe	99	15.8		
Other Foreign	286	14.5		
			.14	.00
Age in 1936				
17 - 29	958	15.9		
30 - 44	892	15.0		
45 - 77	648	14.3		
			.29	.00
Years of Schooling				
0 - 5	259	13.8		
6	251	14.2		
7	344	14.7		
8	957	15.0		
9 - 16	668	16.6		
			.45	.00
Apprenticeship Training				
No	1669	15.2		
Yes	829	15.1		
			.01	.55
Industry of First Job				
Textiles	420	14.0		
Hosiery	311	14.8		
Metal	428	15.3		
Other Manufacturing	299	14.8		
Bldg/Construction	49	14.8		
Trade/Commerce	225	14.8		
Gov't/Institution	65	14.9		
Service	11	14.5		
Agriculture	75	14.3		
Other	68	16.0		
			.26	.00
Skill Level of First Job				
Skilled	156	15.3		
Semiskilled	927	14.5		
Unskilled	222	14.7		
Apprentice	291	15.1		
White Collar	335	15.0		
Other	376	16.7		
			.38	.00

1682

The impact of schooling on shifts in the age of beginning work, hinted at in general breakdowns, is clearly revealed in multi-variate analysis. When years of formal education was controlled, distinctions between young men and women and among generations on age entering the work force disappeared (Table II). Older workers tended to have had less schooling and thus began working in their early teens; across all generations, moreover, a strong positive relationship existed between educational experience and age of initial entrance to the labor market.[6] Female workers in the survey similarly tended to be young and have had more schooling, thus accounting for their securing their first jobs later than the male respondents. Conversely and notably, all controls failed to eliminate variations between workers with different educational backgrounds on age of beginning work. Schooling obviously changed the basic demography of entrance to the labor market.

The only point where years of formal education failed to reduce distinctions was in the factor of place of birth. Workers of Italian and Eastern European origin entered the work force at markedly older ages than Philadelphians born elsewhere in controlled analysis. This was a surprising result for these turn-of-the-century immigrants were older, disproportionately male and generally unschooled members of the Palmer survey -- all conditions predicing early entrance to work. Cultural orientation, peculiar family dynamics or difficulty in finding jobs could explain their particular histories. Intuitively the latter answer seems the most plausible and here intuition is borne out by statistics on the length of job search,

TABLE II: Multiple Classification Analysis: Age Entered the Work Force by Sex, Place of Birth and Years of Schooling with Age as a Covariate

Grand Mean = 15.16

Variable and Category	N	Unadjusted		Adjusted for Independents		Adjusted for Independents and Covariates	
		Mean	Eta	Mean	Beta	Mean	Beta
Sex							
Male	1860	15.03		15.07		15.14	
Female	619	15.54		15.44		15.22	
			.11		.08		.02
Place of Birth							
Philadelphia	1607	15.26		15.09		15.14	
USA Other	264	15.31		15.34		15.41	
Germany	118	14.97		15.07		15.13	
Italy	115	14.70		15.60		15.51	
E. Europe	99	15.78		16.39		16.47	
Other Europe	276	14.46		14.81		15.03	
			.15		.15		.15
Years Of Schooling							
0 - 5	259	13.76		13.63		13.91	
6	251	14.20		14.21		14.34	
7	344	14.72		14.75		14.74	
8	957	14.97		14.98		14.99	
9 -16	668	16.56		15.58		15.42	
			.45		.46		.40
Multiple R Squared					.24		.25
Multiple R					.48		.50

that is the interval between leaving school and securing first employment.

For the participants in the 1936 Palmer study, an average of six months passed between their leaving school and taking their first jobs. No significant differences emerged between men and women or across generations on this factor (Table III). There was a definite tendency for young people with the least years of schooling to spend the greatest time between school and work, but the most important distinctions occured between workers of different national origin. Here the career histories of Italian and Eastern European born Philadelphians was truly particular with the interval between obtaining employment and leaving school for them extending on an average over a sixteen month period. Controls by years of schooling and age failed to make their experiences approximate the norm (Table IV). Whether it was the result of language problems, lack of resources or information, or plain discrimination, new European immigrant workers apparently encountered great obstacles in entering the labor market. The Palmer data thus highlights the historical role played by educational institutions in prolonging the transitional process of entrance to the work-a-day world and how certain newcomers to the city of Philadelphia found their passage into the labor market to be an uneasy and uncertain experience.

Schooling and Training

Only 37 respondents or slightly more than 1 percent of the entire survey reported having no formal education. Seventy-

TABLE III: Interval Between Leaving School and Finding Work by Various Factors

	N	Interval Between Leaving School and Finding Work (In Years)	Eta	Level of Significance
Total Population	2503	.48		
Sex				
Male	1841	.41		
Female	621	.71		
			.10	.00
Place of Birth				
Philadelphia	1607	.36		
Other USA	265	.38		
Germany	118	.67		
Italy	107	1.33		
E. Europe	88	1.37		
Other Foreign	277	.59		
			.21	.00
Age in 1936				
17 - 29	956	.46		
30 - 44	882	.53		
45 - 77	624	.43		
			.03	.00
Years Of Schooling				
0 - 5	184	1.12		
6	194	.48		
7	308	.38		
8	873	.43		
9 - 16	617	.36		
			.16	.00
Apprenticeship Training				
No	1643	.49		
Yes	819	.48		
			.00	.93
Industry of First Job				
Textiles	414	.10		
Hosiery	311	.13		
Metal	424	.08		
Other Manufacturing	292	.18		
Building/Construction	49	.08		
Trade/Commerce	225	.07		
Gov't/Institution	65	.11		
Service	11	.09		
Agriculture	71	.81		
Other Trade	65	1.88		
			.37	.00
Skill Level of First Job				
Skilled	154	.20		
Semiskilled	914	.10		
Unskilled	215	.67		
Apprentice	270	.38		
White Collar	335	.08		
Other	376	1.42		
			.40	.00

TABLE IV: Multiple Classification Analysis: Interval Between Leaving School and Finding Work by Years of Schooling and Place of Birth with Age as a Covariate

Grand Mean= .47

Variable and Category	N	Unadjusted Mean	Unadjusted Eta	Adjusted for Independents Mean	Adjusted for Independents Beta	Adjusted for Independents and Covariates Mean	Adjusted for Independents and Covariates Beta
Years of Schooling							
0 - 5	184	1.12		.91		1.00	
6	194	.48		.44		.47	
7	308	.38		.43		.42	
8	873	.43		.45		.45	
9 -16	617	.36		.40		.36	
			.16		.10		.13
Place of Birth							
Philadelphia	1603	.36		.39		.37	
USA Other	264	.38		.38		.41	
Germany	118	.67		.68		.72	
Italy	103	1.25		1.09		1.08	
E. Europe	88	1.38		1.28		1.32	
			.21		.18		.19
Multiple R Squared					.05		.06
Multiple R					.23		.24

two percent had passed through eight years or less of schooling, another 26 percent spent some time in high school (only 7 percent of the sample actually graduated from secondary school), while sixteen individuals had had the advantage of some college training (only four actually achieving college degrees). The group as a whole averaged 7.8 years of education.

The two most important determinants of length of schooling were place and year of birth. Survey members born in the United States or Germany had significantly more formal education than those from other countries, and older workers tended to have had fewer years of schooling than twentieth century workers born into a world with well established educational institutions. In controlled analysis variations between men and women of different national origin and generations failed to be reduced, but as the figures in Table V indicate, age distinctions remained the clearest. To a certain extent, then, when a person was born was a more critical matter for schooling than where.

One third of the participants in the Palmer study also reported having formal apprenticeship training at some point in their careers. As the figures in Table VI reveal, apprenticeship was definitely a male preserve; while close to 60 percent of the male workers had served as apprentices, only 11 percent of the women were similarly trained. Survey members born before the nineteenth century also tended to become apprenticed at greater rates than their younger co-workers, but the differences were not as striking as would be expected if apprenticeship is viewed as a passing institution.

TABLE V: Multiple Classification Analysis: Years of Schooling By Sex, Place of Birth and Age

Grand Mean = 7.82

Variable and Category	N	Unadjusted Mean	Unadjusted Eta	Adjusted for Independents Mean	Adjusted for Independents Beta
Place of Birth					
Philadelphia	1609	8.18		8.05	
USA Others	264	8.05		8.19	
Germany	118	8.07		8.24	
Italy	115	5.40		5.58	
E. Europe	99	6.05		6.37	
Other Foreign	278	7.05		7.42	
			.34		.28
Sex					
Male	1864	7.71		7.90	
Female	619	8.16		7.58	
			.09		.06
Age in 1936					
17 - 29	957	8.67		8.58	
30 - 44	885	7.49		8.55	
45 - 77	641	7.00		8.06	
			.32		.29

1689

TABLE VI: Apprenticeship Training By Several Factors

	N	Percentage Reporting Apprenticeship	Percentage Reporting No Apprenticeship	Contincency Coefficient C	Level of Significance
Total Population	2503	33	66	-	-
Sex					
Male	1878	59	41		
Female	625	11	89	.27	.00
Place of Birth					
Philadelphia	1614	30	70		
Other USA	265	36	64		
Germany	118	57	43		
Italy	119	42	58		
E. European	99	39	61		
Other Foreign	288	34	66	.13	.00
Age in 1936					
17 - 29	958	25	76		
30 - 44	892	37	63		
45 - 77	652	40	60	.15	.00
Years of Schooling					
0 - 5	261	32	68		
6	251	35	65		
7	344	33	67		
8	958	35	65		
9 -16	670	30	70	.05	.13
Industry of First Job					
Textile	421	21	79		
Hosiery	311	44	56		
Metal	429	52	48		
Other Manufacturing	299	31	69		
Bldg/Construction	49	25	75		
Trade/Commerce	225	25	75		
Gov't/Institution	65	23	77		
Service	11	27	73		
Agriculture	75	36	64		
Other Trades	70	34	66	.25	.00

One other notable distinction on apprenticeship emerged. The percentage of German-born Philadelphians enrolled in apprenticeship programs was far larger than for any other nationality group. This was partially expected. Germans dominated the one industry where apprenticeship survived, metal trades; although only 5 percent of the sample, German workers comprised one-third of the labor force in metal work. The place of apprenticeship in German education also played a role (many of the German-born workers in the sample had their first job experiences in their native country). Apprenticeship, though not a dominant feature or a majority experience in Philadelphia, remained an important part of the economic life of the city as the Palmer data uniquely illustrate.

Getting Work

For the historian, the richest and most unusual part of the Palmer survey includes information on methods of obtaining work. During the course of interviews, Palmer and her associates carefully recorded how respondents secured each of their jobs. A scarcity of such data has severely limited historical treatment of this important issue. What is available in the existing literature are suggestions and inferences, not definitive findings.

Students of family history, for example, such as Michael Anderson and Tamara Hareven, have emphasized the role played by family connections in job procurement.[8] Their view partially corresponds to predictions of both modernization and labor market segmentation theory. Working people of "traditional" cultures or laborers locked into secondary labor market positions, advocates of these perspectives might hypothesize, would rely on kinship systems whereas individuals exposed to modern industrial society or part of the primary labor market realm would be more likely to utilize impersonal or institutional mechanisms to secure work (e.g., newspaper want ads and employment agencies).[9] A completely different picture is provided by recent geographical and occupational mobility studies, and indirectly, by neoclassical economic theory: an image of deracinated men and women in perpetual motion relying on their wits alone, fending for themselves in what to all intents and purposes are competitive labor markets. The Palmer data provides the means to evaluate these suggestions and theories.

As the figures in Table VII indicate, participants in the Palmer survey secured employment in at least seventeen distinct ways. Twenty-seven percent of the Philadelphians sampled obtained their first jobs through the intervention of family members -- parents, siblings, and other kin. Another quarter utilized non-familial personal connections, relying on the assistance of friends, neighbors and politicians. The largest number, 40 percent of the total, secured work on first entrance to the labor market through their own initiative, presenting themselves directly to their prospective employers. The remaining 9 percent took advantage of various institutional mechanisms -- newspapers and radio advertisements, employment agencies and school referral services. Clearly family connection on first job application was important, but not as dominant a factor as Anderson, Hareven and other students of

Table VII: Methods of Getting Work

	First Job		Intermediate Jobs		Job Held in 1936	
	N	%	N	%	N	%
FAMILY CONNECTION	367	27	117	10	146	12
Parents	173	47	26	22	27	18
Siblings	90	24	32	27	46	31
Other Kin	104	28	59	50	73	50
PERSONAL CONNECTION	340	25	333	30	403	32
Friends	314	92	291	87	347	86
Neighbors	22	7	5	1	6	1
Former Supervisors	2	1	34	10	45	11
Political Pull	2	1	3	1	5	1
PERSONAL INITIATIVE	555	40	566	50	576	46
Standing at Factory Gate	33	5	23	4	32	5
Written Application	169	30	147	26	200	34
Walking from Factory to Factory	353	64	396	70	344	60
INSTITUTIONS	123	9	113	10	124	10
Newspaper Ads	47	38	60	53	47	38
Radio Ads	5	4	1	1	0	0
Union Hiring Hall	2	1	9	8	11	8
Employment Agency	22	17	34	30	58	47
Junior Employment Service	26	21	4	3	1	1
School Reference	21	17	5	4	7	5

family history would have us believe.

First employment only represented a small step in the occupational experiences of the laboring people surveyed in the Palmer study. Few workers remained at their first jobs or with their initial employers for long periods of time. Motility, uncertainty, and irregularity, in fact, marked their entire working lives and getting work was a recurrent activity. How they gained employment, however, changed as they grew older and sought new jobs.

Family connection notably declined in importance in secondary efforts at securing work. While more than one-fourth of the respondents to the Palmer survey mentioned the help of kin in obtaining first jobs, no more than 12 percent reported family assistance for subsequent positions. In addition, for those workers who relied on the intervention of family members, the role of parents in particular diminished over time. Siblings and other kin played a more significant role. Retirement and death obviously rendered parents less important in their children's later employment prospects.

Personal connections rose in relative significance over the working life, with one-third of the sample noting the assistance of acquaintances in securing their jobs in 1936. Here the growing influence of supervisors and foremen is particularly noteworthy. Workers frequently moved to new positions with their supervisors when the latter transferred to different firms. Others secured positions through the fortunate happenstance of meeting former supervisors when making application for new jobs. Taking advantage of such networks was only made possible after gaining both initial entrance to trades and the favor of overseers.

Philadelphians also relied more heavily on their own pluck and stamina in subsequent employment efforts with little change in the specific methods of personal initiative pursued. Finally, and certainly of note, the percentage of workers relying on formal institutions remained constant over the course of careers, with a steady 10 percent of those surveyed owing their first and subsequent jobs to various agencies. Among those reliant on such assistance, there was a growing use of employment bureaus over time and not surprisingly, a decline in the importance of school referral services. School played a greater role in initial employment than in later career experiences, a point to be re-emphasized shortly.

Table VII then reveals the importance of approaching the question of how workers obtained work in terms of occupational history or career. Family connection figured significantly in initial hire but declined in efficacy in subsequent employment applications. Family intervention cannot, in other works, be analyzed without specifying the state reached in the occupational life cycle of the individual worker.

The Palmer data also allow for the drawing of finer distinctions. Methods of getting work not only varied by career stage, but also by the gender, nativity, generation, education, skill level, and trade of the workers involved. Breakdowns along all the above axes are presented in Table VIII; they make the whole question of job procurement more complex, rich and interesting than the suggestions, allusions and inferences available in the existing historical and theoretical literature.

Table VIII reveals that men and women basically secured their jobs in similar ways. Family connection proved equally important for both in intital hire and less important in subsequent positions. Men and women also used institutions in similar, steady ratios. The key difference emerged in the categories of personal connection and individual initiative. At all stages of their careers, female workers relied to a greater extent on the assistance of friends and neighbors and less on personal initiative. The figures here hint at what can be found in the interviews: that women were less likely to present themselves alone and directly to employers than men, less likely to stand at factory gates or wander the city looking for work, and conversely, were more reliant on non-familial, gender specific networks based on the block, neighborhood and work. "My girlfriend got me the job," is a common refrain. In this way, methods of securing employment were both similar and different for male and female workers in Philadelphia.

When place of birth is considered, the similarities on getting work for the various nativity groups are more significant than the differences. Philadelphians of varied national origin relied on family assistance in roughly similar proportions on first entrance to the labor market; moreover, family intervention declined in importance for all groups over career stages. If there is a surprise here, it is the low number of Italian born workers reporting the use of family connection. Also absent from the interviews is any mention of the padrone system. Either the Italian workers in the Palmer study were unrepresentative (or circumspect), labor market conditions had changed by the 1920s and 1930s, or common assumptions about the habits and strategies of "traditional" immigrant workers are greatly in need of reassessment and study. No where is the latter more evident than in

Table VIII: Correlates of Methods of Getting Work

	First Job					Intermediate Jobs					Job Held In 1936				
		Family	Personal				Family	Personal				Family	Personal		
	N	Cnctn.	Cnctn.	Init.	Insts.	N	Cnctn.	Cnctn.	Init.	Insts.	N	Cnctn.	Cnctn.	Init.	Insts.
		%	%	%	%		%	%	%	%		%	%	%	%
Total	1385	27	25	40	9	1129	10	30	50	10	1249	12	32	46	10
Sex															
Male	984	28	22	41	9	822	10	28	52	10	925	11	30	50	10
Female	401	23	31	38	8	307	11	35	45	9	324	25	40	36	10
				C=.10(.00)					C=.07(.10)					C=.12(.00)	
Place of Birth															
Philadelphia	929	26	25	40	9	697	10	33	49	9	828	13	36	42	9
Rest of USA	147	28	25	37	11	136	14	21	52	13	128	9	21	56	14
Germany	67	27	21	36	16	60	17	25	45	13	62	8	40	42	10
Italy	56	20	21	55	4	38	8	32	45	16	51	10	16	61	8
E. Europe	46	29	29	37	4	51	12	29	55	4	12	12	21	60	8
Other Foreign	138	30	22	40	9	147	8	22	59	12	128	6	30	53	11
				C=.11(.41)					C=.14(.04)					C=.17(.06)	
Age in 1936															
17-29	609	24	29	35	12	380	13	37	27	10	607	15	35	40	9
30-44	467	25	22	47	8	441	9	28	33	11	434	10	30	51	10
45-77	309	34	19	42	5	308	8	23	59	9	308	8	31	49	11
				C=.17(.00)					C=.16(.00)					C=.12(.00)	
Years of Schooling															
0-5	125	34	20	42	4	129	8	31	56	6	122	5	28	53	14
6	139	32	24	38	7	134	10	31	52	8	133	10	28	53	8
7	185	29	23	43	6	168	12	35	45	8	150	15	33	43	9
8	529	26	23	43	8	440	11	30	50	10	475	11	35	44	9
9-16	401	23	29	35	14	258	11	26	50	14	363	13	32	44	11
				C=.,5(.00)					C=.11(.32)					C=.11(.18)	
Industry															
Textiles	216	34	16	47	3						155	12	34	49	5
Hosiery	192	29	39	30	3						283	18	46	27	9
Metal Trades	233	26	28	38	8						577	9	29	54	9
Other Manuf.	151	17	23	46	14						53	15	36	34	15
Building and Construction	27	41	22	30	7						17	12	0	41	47
Trade and Commerce	127	19	18	47	17						13	15	15	61	8
Government, Util. Offices	32	9	13	56	22						51	2	24	55	20
Service	5	80	0	20	0						5	20	20	40	20
Agriculture	36	36	31	25	8						8	36	13	50	0
Other Trade	33	52	24	18	6						87	12	23	54	12
				C=.31(.00)										C=.30(.00)	

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	First Job					Intermediate Jobs					Job Held In 1936				
	N	Family Cnctn. %	Personal Cnctn. %	Init. %	Insts. %	N	Family Cnctn. %	Personal Cnctn. %	Init. %	Insts. %	N	Family Cnctn. %	Personal Cnctn. %	Init. %	Insts. %
Skill Level															
Skilled	85	39	26	37	6						560	10	32	48	10
Semiskilled	513	28	27	40	5						511	14	34	44	8
Unskilled	110	36	30	25	8						47	6	36	36	21
Apprentices	147	28	22	40	10						8	25	0	50	25
White Collar	179	18	16	47	19						10	10	40	20	30
Other	256	24	25	40	12						86	12	22	55	12
				C=.21(.00)										C=.15(.00)	
Full-Timer or Part Timer															
Full-Time	1003	25	25	41	9						917	11	32	47	11
Part-Time	536	30	25	37	8						332	13	34	45	8
				C=.05(.37)										C=.04(.55)	

Note: Absolute figures along rows change because of missing information. Contingency C coefficient is given as measure of association with level of statistical signficance given in parenthesis).

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the figures on institutional assistance. Over the course of their careers, it was only Italian and Eastern European born workers who recorded increasing resort to institutionalized agencies in securing work. They were not adverse then to using "modern" methods, and as newcomers to the city, like those native Americans born outside Philadelphia, they appear to have been progressively forced to rely on formal employment services. The information gathered by Palmer and her associates brings into question not only the existence of such institutions as the padrone system, but also various arguments about the behavior of workers from different cultural backgrounds and different exposures to industrial society.

The time at which workers entered the labor market proved to be a more important factor determining methods used to secure work. As the evidence in Table VIII indicates, those workers who first gained entrance to the job market in the late nineteenth century relied to a greater extent on family connection than their twentieth century counterparts, and conversely, reported minimal use of formal employment agencies. Over the course of careers, all age cohorts, however, registered less reliance on familial intervention. This points to the greater importance of career time over historical time. No matter to which generation the sample member belonged, help from kin decreased over the working life.

There is one other significant pattern in the age data. While the use of institutions remained constant for the two twentieth century cohorts in the study, there was a notable increase in resort to formal services by the oldest generation of workers. This, too, runs counter to the expectations prompted by modernization theory that workers born into mature industrial society would be more likely to rely on formal institutional mechanisms. In fact, it was the oldest workers who over the course of their careers relied increasingly on institutional help.

Education also proved an important factor. On initial entrance to the job market those with greater years of schooling tended to use institutional services more and family connection less than those workers who left school earlier or had no formal education (here, modernization theory is corroborated). This relationship held, though not in as strong a fashion, for intermediate positions and completely dissipated by the last job secured. School attainment then appears to have played a significant role in first job applications and declined in significance over the course of the working life.

There is one kink in the data reported in Table VIII on schooling and means of securing employment which deserves additional comment. A reversal in the relationship between education and method of getting work appears in the last column; the figures here indicate that those with the least amount of schooling relied to the greatest extent on formal agencies to obtain their positions held in 1936. Late in careers, in other words, workers with little education sought formal help in securing new employment. Since a similar finding was found for age -- older workers also used institutions to a greater degree to get their latest jobs -- a question arises as to whether years of schooling or generation was more important in influencing methods of getting work.

Table IX provides figures on education and means of job

Table IX: Getting Work By Education and Age Cohort

First Job

	Age 17-29					Age: 30-44					Age 45-77				
		Family	Personal				Family	Personal				Family	Personal		
	N	Cnctn.	Cnctn.	Init.	Instit.	N	Cnctn.	Cnctn.	Init.	Instit.	N	Cnctn.	Cnctn.	Init.	Instit.
Years of Schooling		%	%	%	%		%	%	%	%		%	%	%	%
0-5	5	20	20	60	0	54	20	20	56	4	66	46	20	30	5
6	35	31	23	34	11	56	30	23	39	7	48	33	25	40	2
7	86	29	22	42	7	69	26	23	45	6	30	33	23	40	3
8	211	25	33	33	9	198	21	18	52	9	120	33	24	47	6
9-16	271	21	30	33	16	87	30	28	31	12	43	16	23	56	5
					C=.16(.16)					C=.18(.17)					C-.21(.21)

Job Held in 1936

	Age 17-29					Age: 30-44					Age 45-77				
		Family	Personal				Family	Personal				Family	Personal		
	N	Cnctn.	Cnctn.	Init.	Instit.	N	Cnctn.	Cnctn.	Init.	Instit.	N	Cnctn.	Cnctn.	Init.	Instit.
Years of Schooling		%	%	%	%		%	%	%	%		%	%	%	%
0-5	3	0	0	100	0	51	4	22	61	14	68	6	34	46	15
6	30	27	23	40	10	57	7	28	60	5	46	9	30	52	9
7	65	19	40	31	8	58	16	24	53	7	27	4	33	44	19
8	174	14	39	39	9	185	11	34	46	9	116	8	32	50	10
9-16	234	14	34	42	10	79	10	29	46	15	50	50	14	26	8
					C=.14(.49)					C=.18(.22)					C=.15(.84)

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procurement controlled for age cohort. Although the numbers are small, the patterns indicated are suggestive. For those workers entering the labor market in the twentieth century, there was a clear relationship between years of schooling and use of formal agencies in securing initial employment. For Philadelphians seeking their first jobs in the late nineteenth century, reliance on institutions was not related to schooling, but more interestingly those who stayed in school were much less likely to secure their initial employment through family intervention. At least in terms of first entrance to the labor market, the influence of education on methods of getting work spanned historical time.

The situation changed for jobs obtained late in careers. For those who joined the labor force in the twentieth century there was a connection between years of schooling and the likelihood of using institutionalized means of obtaining employment, but one not as strong as for first job. For the late nineteenth century cohort, however, those with the least amount of schooling tended to rely on formal services to the greatest extent. Thus it was not just older workers who late in their working lives were forced to use agencies to secure jobs, as noted earlier, but older workers with fewest years of schooling.

Finally, the Palmer data provided an opportunity to determine the relationship between methods of obtaining work and the character of the work sought. As the figures in Table VIII indicate, no distinctive patterns existed between means of getting work and trade and skill level of jobs sought. A few special cases, however, deserve note. On first job, for instance, workers seeking employment in the building and construction industries relied heavily on family connection; conversely, those gaining jobs in trade, commerce and government offices used formal agencies to the greatest degree.

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The latter findings are replicated in the skill level breakdowns. Philadelphians seeking white collar work relied heavily on institutionalized means. Skilled workers, on the other hand, obtained their first positions through family connection more than other workers.[10]

For all trades and skill levels there was a definitive drop in the importance of family intervention over careers and a rise in the use of formal employment agencies in later employment efforts. Older, uneducated workers accounted for the increase. In general, besides the connection between white collar work and institutionalized employment services, the relation between type of job and method of getting work was not clearcut. The working people of Philadelphia may have been divided by trade and skill level, yet no matter what kind of employment they sought they endeavored to find work in similar ways.

This point is made clear in the last part of Table VIII. Here workers were divided between those who worked full-time throughout their careers and those who held mostly part-time jobs. The division made approximates the primary and secondary labor market dichotomy struck by labor economists. Labor market segmentation theory would predict significant differences in methods of securing work between the two groups, but the data indicates that part-timers and full-timers used remarkably similar methods of obtaining work.

Method of securing employment has been treated here as a dependent factor. Family connection was found to be an important device for a significant minority of those surveyed, but only during initial entrance to the job market. Older and less schooled workers tended to use kin networks to the greatest extent. Institutionalized mechanisms were generally utilized by younger and better schooled respondents, but late in their careers older Philadelphians with little formal education were forced to seek agency assistance. Few notable distinctions on methods of getting work emerged by the type of employment sought or by the sex or national origins of the members of the sample, suggestive findings in themselves.

Strategies for securing gainful employment, however, can also be thought of as an independent factor shaping subsequent job experiences. Questions arise: Did the ways in which men and women in Philadelphia obtained work affect their employment histories? Did workers who owed their hire to family members, for example, have more stable careers? These questions bear on the larger issue of employment patterns among the participants of the Palmer study.

Employment Histories

The employment patterns of the respondents to Palmer's 1936 survey can only be characterized as unsteady and irregular. During the ten year period from 1926-1935, for example, the men and women questioned had been hired on an average by three different employers, worked for these employers for an average of three and a half years, changed both their occupational titles and trades at least once, and been unemployed an average of fifteen months (with the average span of unemployment lasting nine months). Over the course of their careers they experienced an average of eleven changes of one form or another in their job status (Table X).

Age in 1936 proved to be the most salient factor in employment history. Older workers, not surprisingly, tended to be both employed and unemployed for longer periods of time and to have experienced the greatest number of career shifts; with their greater years in the work force, that was to be expected. Distinctions that did materialize between men and women, married and single workers, and among Philadelphians of different nationality and educational backgrounds can be explained by age variations. The real surprise, however, emerged in employment experiences between the years 1926 and 1937; as the figures in Table X indicate, it was the youngest respondents who reported the greatest number of employer, occupational and trade changes, quite contrary to expectation. Workers born in the twentieth century were not the most mobile by design during the ten year period prior to the survey; when reasons for job shifts are examined, as will be discussed shortly, the most recent entrants to the labor market comprised the group of employees most susceptible to cutbacks and lay-offs.

The factor of age also influenced the results on occupational history and methods of getting work. Workers using family connections to obtain employment generally had the most stable careers; conversely, the figures for Philadelphians relying on institutional mechanisms indicate unsteady work histories. Survey members utilizing kin networks had fewer job shifts on an average and were employed for longer periods of time; this suggests that they were tied to their work in a different manner than other workers. When age was controlled, however, distinctions on employment histories for respondents depending on different methods of

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TABLE X : Indicators of Employment History by Various Factors

Variables and Categories N	Lengths of First Job (Months)	Eta (Level of Significance)	Years Employed Regular Occupation	Eta (Level of Significance)	Months Unemployed 1926-1935	Eta (Level of Significance)	Number of Job Changes 1926-1935	Eta (Level of Significance)	Number of Employer Shifts 1926-1935	Eta (Level of Significance)	Number of Occupational Shifts 1926-1935	Eta (Level of Significance)	Number of Industry Shifts	Eta (Level of Significance)	Average Length of Job 1926-1935 (Months)	Eta (Level of Significance)	Average Lengths of Unemployment 1926-1935 (Months)	Eta (Level of Significance)	Number of Months Employed Full-Time	Eta (Level of Significance)	Number of Months Employed Part-Time	Eta (Level of Significance)	Total Number of Job Changes	Eta (Level of Significance)
TOTAL POPULATION	29.3		14.3		15.2		2.9		1.8		1.2		1.2		41.2		9.0		72.8		12.0		11.0	
Sex																								
Male	31.8		16.6		15.8		3.0		1.9		1.3		1.3		44.5		9.5		78.5		12.3		11.4	
Female	21.6		7.4		13.3		2.5		1.5		1.3		0.7		31.5		7.4		55.8		11.2		8.6	
		.13(.00)		.34(.00)		.05(.00)		.08(.00)		.09(.00)		.07(.00)		.15(.00)		.16(.00)		.06(.00)		.25(.00)		.02(.26)		.12(.00)
Place of Birth																								
Philadelphia	23.4		12.0		14.4		2.8		1.8		1.2		1.1		39.3		8.4		71.0		10.9		10.4	
USA Others	29.5		16.2		15.2		3.0		2.2		1.6		1.6		43.8		9.4		78.6		10.0		10.9	
Germany	38.2		17.0		10.7		3.7		2.7		1.3		1.7		40.4		6.2		87.3		11.4		12.1	
Italy	49.9		15.7		20.4		3.7		1.9		1.0		1.4		39.5		7.7		75.3		15.2		14.4	
E. Europe	43.3		18.7		23.3		2.3		1.4		0.6		0.8		49.7		16.7		64.8		17.9		11.1	
Other Foreign	44.5		22.0		16.1		2.6		1.6		0.8		1.2		47.6		10.5		73.3		16.1		12.4	
		.26(.00)		.30(.00)		.12(.00)		.11(.00)		.12(.00)		.12(.00)		.13(.00)		.09(.00)		.13(.00)		.11(.00)		.10(.00)		.16(.00)

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TABLE X: Page two

Age in 1936												
17 - 29	17.8	5.4	13.9	3.3	2.0	1.7	1.2	26.5	7.4	60.8	9.0	9.2
30 - 44	30.2	14.0	15.0	3.1	2.1	1.1	1.3	44.8	8.6	81.4	13.8	12.5
45 - 77	44.1	27.8	17.3	2.0	1.2	0.6	0.9	58.0	11.9	78.7	13.9	11.6
	.29(.00)	.77(.00)	.07(.00)	.20(.00)	.17(.00)	.24(.00)	.09(.00)	.35(.00)	.35(.00)	.23(.00)	.11(.00)	.22(.00)
Years of Schooling												
0 - 5	49.8	21.6	19.3	2.7	1.3	0.7	1.0	52.4	11.4	72.3	17.9	12.8
6	36.0	16.9	19.3	3.0	1.8	1.1	1.2	42.6	11.4	74.7	13.1	12.6
7	23.7	13.7	15.4	3.3	2.1	1.3	1.1	38.8	8.8	77.3	12.6	12.1
8	28.6	14.9	14.0	2.9	1.9	1.2	1.2	43.8	8.4	77.9	12.5	10.8
9 - 16	22.2	9.5	13.6	2.7	1.7	1.4	1.2	33.5	7.9	62.7	8.2	9.3
	.23(.00)	.32(.00)	.11(.00)	.16(.00)	.10(.00)	.11(.00)	.04(.29)	.16(.00)	.09(.00)	.16(.00)	.14(.00)	.19 (.00)
Marital Status												
Married	32.4	16.9	14.8	2.9	1.9	1.2	1.2	45.4	9.0	79.8	12.8	11.7
Divorced/widowed	30.1	16.7	15.7	2.6	1.5	.9	.9	45.9	8.1	72.4	11.7	11.8
Single	21.4	7.6	15.9	2.8	1.6	1.3	1.0	30.1	9.1	56.6	9.9	9.0
	.14(.00)	.37(.01)	.02(.46)	.03(.15)	.07(.00)	.05(.03)	.09(.00)	.19(.00)	.02(.71)	.25(.00)	.06(.00)	.18 (.00)
Apprenticeship Training												
NO	28.8	12.4	15.6	2.9	1.8	1.3	1.2	39.6	8.8	68.5	12.6	10.9
YES	30.3	18.1	14.3	2.9	1.9	1.1	1.2	44.6	9.2	81.6	10.7	11.1
	.02(.00)	.24(.00)	.03(09)	.00(.68)	.03(00	.05(.01)	.00(.70)	.07(.00)	.01(.51)	.16(.00)	.04(.02)	.01(.54)
Industry of First Job												
Textiles	32.3	18.0	17.3	2.7	1.7	1.1	1.0	45.5	10.7	70.6	16.7	12.1
Hosiery	23.6	11.5	11.4	3.1	1.8	0.8	0.4	35.0	6.9	73.1	14.3	11.2
Metal	34.9	18.4	13.6	2.9	1.9	1.1	1.5	43.8	8.8	84.5	8.8	10.3
Other Manufacturing	24.4	15.0	15.2	3.3	2.3	1.6	1.7	43.8	8.1	77.1	13.5	11.4
Building/Cons't	39.2	11.7	18.9	3.7	2.0	1.4	1.2	42.9	8.2	75.1	17.1	12.9
Trade/Commerce	21.0	14.1	[illegible]	[illegible]	[illegible]	1.6	1.5	46.8	6.7	83.0	11.3	11.2
Gov't/Institution	28.0	14.3	12.3	3.2	2.2	1.6	1.4	46.7	8.0	87.2	9.0	10.9
Service	25.4	11.7	18.2	3.9	1.9	1.7	1.4	36.0	10.4	72.0	17.4	11.3
Agriculture	65.4	18.6	21.5	3.1	2.1	1.2	1.4	45.6	13.9	81.4	11.2	12.5
Other Trade	43.6	16.2	17.2	2.7	1.9	1.5	1.5	48.8	12.1	72.1	15.3	11.2
	.25(.06)	,23(.05)	.14(.00)	.08(.16)	.09(.00)	.14(.00)	.24(.00)	.11(.00)	.13(.00)	.15(.00)	.14(.00)	.11(.00)

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TABLE X: Page three

Skill Level of First Job

Skilled	34.9	14.0	16.9	2.9	1.7	1.2	1.2	41.9	10.9	75.2	11.7	10.3
Semiskilled	27.5	14.9	14.7	2.9	1.8	1.1	1.0	42.0	8.7	72.7	15.6	11.5
Unskilled	42.8	16.6	17.5	3.1	2.0	1.4	1.3	45.7	10.6	78.0	12.7	11.9
Apprentice	44.1	22.6	13.0	2.7	2.0	1.0	1.6	47.7	8.7	90.0	8.8	10.7
White Collar	20.1	13.5	12.1	3.3	2.2	1.6	1.5	43.3	7.1	82.3	10.6	11.4
Other	18.4	6.9	18.2	2.6	1.5	1.2	1.0	27.9	9.7	50.7	8.2	9.8
	.26(.00)	.37(.00)	.11(.00)	.08(.01)	.10(.00)	.11(.00)	.14(.00)	.17(.00)	.08(.01)	.29(.00)	.14(.00)	.11(.00)

Method of Obtaining First Job

Family Connection	31.0	14.8	13.8	2.7	1.5	1.1	0.9	42.2	8.1	72.8	10.2	11.0
Personal Connection	25.7	11.7	13.1	3.0	1.9	1.3	1.1	35.9	7.4	70.1	10.8	10.7
Personal Initiative	28.0	13.5	17.2	3.0	2.0	1.3	1.4	36.8	9.8	71.0	9.1	11.6
Institution	21.4	10.3	13.3	3.3	2.2	1.4	1.5	31.5	6.5	69.4	11.6	10.7
	.08(01)	.13(.00)	.10(.00)	.07(.00)	.09(.00)	.07(.06)	.11(.00)	.09(.00)	.09(.00)	.02(.82)	.04(.43)	.06(.19)

Most Common Method of Obtaining Intermediary Jobs

Family	-	13.0	17.4	3.4	2.2	1.4	1.2	34.1	9.0	68.3	11.8	12.6
Personal Connection	-	13.4	15.3	3.4	2.3	1.5	1.3	36.3	8.3	76.2	9.0	11.9
Personal Initiative	-	16.1	17.2	3.2	2.2	1.4	1.5	38.1	10.5	74.4	11.3	12.1
Institution	-	13.7	18.3	3.9	2.9	1.6	1.9	31.3	9.5	75.8	8.7	12.5
		.12(.00)	.05(.40)	.07(.13)	.09(.01)	.03(.77)	.10(.01)	.07(.17)	.07(.12)	.07(.16)	.07(.16)	.04(.70)

getting work tended to reduce though not be eliminated. Family connection remained the most distinct category (Table XI). Finally, figures on employment patterns also indicate that workers having the benefit of formal apprenticeship were more likely to have had steady work histories than those not similarly trained. Apprenticeship had other advantages as well; it was not only a means to securing certain employment but also an aid in occupational achievement.

Occupational Achievement

Workers in the Palmer study shifted horizontally in and out of jobs and vertically into better positions. Since Palmer only gathered information from Philadelphians located in four industries in 1936, her survey cannot be used for a case study of occupational mobility. Yet men and women in her sample did move in narrow bands from unskilled to semi-skilled and skilled positions, and interesting patterns are revealed as to who moved up, down and not at all during their careers.

Forty-three percent of the sample had achieved higher skilled positions by 1936, 50 percent remained the same and 7 percent actually experienced downward mobility (Table XII). Age in 1936 proved to be an important factor, as to be expected; young workers were less likely to have secured skilled jobs than their older counterparts. Surprisingly, random results were found for occupational change and place of birth and years of schooling; neither formal education or membership in a particular national group proved particularly advantageous for moving to more valued posts. But even more surprising were the strong associations between attainment and gender and apprenticeship.

TABLE XI: Multiple Classification Analysis: Average Length of Jobs Held in Months Between 1926 and 1935 By Age and Means of Obtaining First Employment

Grand Mean = 37.60

Variable and Category	N	Unadjusted Mean	Unadjusted Beta	Adjusted for Independents Mean	Adjusted for Independents Beta
Method of Getting Work					
Family Connection	359	42.24		40.91	
Personal Connection	331	35.88		37.73	
Personal Initiative	554	36.87		35.78	
Institution	115	31.50		35.51	
			.09		.06
Age in 1936					
17-29	592	25.85		25.88	
30-44	461	41.49		41.63	
45-77	296	55.05		54.76	
			.35		.34
Multiple R Squared					0.124
Multiple R					0.352

Upward mobility like apprenticeship was a male preserve; only a small number of women workers were able to assume skilled positions. Age was not a factor here because across all age cohorts, women were decidely less occupationally mobile than men. Among the oldest group of workers, those born before 1890, for instance, 49 percent of the males achieved higher status positions and only 19 percent of the women. Similarly, 50 percent of the men born after 1907 -- the youngest cohort -- moved up, while only 4 percent of their female counterparts were so fortuned. Discrimination by gender and sexual segmentation of the work force are clearly revealed in the Palmer data.

The extent to which women were at a disadvantage is further indicated in figures on apprenticeship. As shown in Table XII, apprenticeship was a definite aid in occupational attainment. Formal training on the job and not formal training in school was an avenue to mobility, a significant finding in itself. Since men had greater access to apprentice training, their greater success in moving to higher skilled positions is explicable. But further breakdowns indicated that apprenticeship did not serve to aid female workers in the mobility process. Of the thirty-five women indicating apprenticeship experience, only one moved upward during her career; 70 percent of the males who completed such training on the other hand, were able to move to better positions. Men and women may have gained access to the job market in similar ways and had similarly unstable employment histories, but their working lives certainly diverged on the question of advancement and career possibilities.

TABLE XII: Occupational Attainment by Various Factors

		Percentages				
	N	Moving Up	Staying the Same	Moving Down	C	Level of Significance
Total Population	1117	43	50	7	-	-
Sex						
Male	845	55	38	7		
Female	272	5	86	9		
					.40	.00
Place of Birth						
Philadelphia	712	41	51	8		
USA Other	114	52	44	4		
Germany	40	55	43	2		
Italy	68	49	44	7		
E. Europe	58	41	50	9		
Other Foreign	125	42	49	9		
					.10	.35
Age in 1936						
17-29	382	29	63	8		
30-44	438	53	40	7		
45-77	297	47	46	7		
					.21	.00
Years of Schooling						
0-5	146	43	50	7		
6	136	40	50	10		
7	174	39	52	9		
8	421	45	48	7		
9-16	231	45	50	5		
					.07	.71
Marital Status						
Married	775	51	41	8		
Widowed/Divorced	74	28	68	4		
Single	266	24	69	7		
					.25	.00
Apprenticeship Training						
No	787	35	56	9		
Yes	330	62	35	3		
					.25	.00
Methods of Securing First Job						
Family Connection	182	34	60	6		
Personal Connection	168	39	51	10		
Personal Initiative	231	42	51	7		
Institution	29	52	45	3		
					.10	.00

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TABLE XIII: REASONS FOR JOB CHANGE

Number and Percentage Leaving Following Jobs:

	First		Second		Third		Fourth		Fifth	
REASON FOR JOB CHANGE	N	%	N	%	N	%	N	%	N	%
Immigrate to America	124	6	73	4	46	3	28	2	16	1
Military Service	29	2	78	4	84	5	60	4	41	3
To Take Better Position	799	42	576	30	447	24	346	21	253	18
Promoted	178	9	171	9	128	7	119	7	85	6
Quit	205	11	191	10	154	9	148	9	110	8
Laid Off	269	14	523	27	679	38	740	45	761	53
Fired	13	1	18	1	14	1	11	1	9	1
Finished Apprenticeship	173	9	135	7	74	4	40	3	28	2
Personal Reasons	84	4	67	4	70	5	52	3	42	3
Illness	16	1	23	1	25	1	27	2	24	2
Strike	12	1	42	2	49	3	41	3	42	3
Other	22	1	19	1	24	1	17	1	15	1

Losing Work

Palmer and her associates collected detailed information on reasons for job changes and this material is as unique and rich as the data gathered on methods of securing work. Participants in the survey reported a broad range of reasons for leaving positions; what is particularly interesting is how patterns of explanation shifted over the course of careers(Table XIV).

A majority of the respondents, for example, left their first jobs to accept better positions. Forty-two percent gave that as their explicit reason; 9 percent were promoted within their respective firms, another 9 percent finished apprenticeships, while 6 percent left their first jobs when they immigrated to America. Job change was not a positive choice for the other third of the sample. Fourteen percent actually were laid off during their initial employment, 11 percent quit because of poor working conditions and arrangements, 2 percent went into military service, 13 individuals were fired for disciplinary reasons, and personal problems, illness and strikes were cited by the rest.

Over careers there was a notable shift in the percentages of people leaving jobs for positive and involuntary reasons. Between first and fifth job change there was a successive decline in those answering "to take a better position" from 42 percent to 18 percent. Conversely, the percentage of survey members laid off from their jobs rose progressively from 14 percent to a majority of 53 percent. All other categories remained constant. Late in careers a job change, the Palmer data indicates, meant unemployment for the Philadelphians sampled and shifts into better employment situations was only a possibility for most early in their working lifetimes.

The reasons for leaving work were also not evenly distributed among different groups of respondents. The youngest cohort, for example, sample members born after 1907, were more likely to be laid off from first and subsequent jobs than their older counterparts. They became part of the work force in particularly precarious times. Age also affected distinctions between men and women -- female workers lost their jobs to a greater extent than males -- but as females they were doubly jeopardized. As the figures in Table XIV indicate, on fifth job shift, 72 percent of the women left work because of lay-offs; only 49 percent of the men were forced to leave for similar reasons. More significantly, on fifth change, 21 percent of the men still left "to take better positions" while only 6 percent of the women were presented with such opportunities. Again, the Palmer survey reveals differences in the employment histories of men and women, here through the data collected on reasons for job transfers.

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With a few exceptions most of the other distinctions that appear in Table XIV can be explained by the factor of age. The exceptions deserve mention: Philadelphia workers born in Germany, for instance, tended to leave positions for positive reasons to a greater extent than workers born elsewhere; a similar finding was found for those who held white collar positions. Survey members in one particular industry, on the other hand, faced the prospect of lay-offs to the greatest extent by far, and that not

Table XIV: Reasons for Job Changes By Vairous Factors for First and Fifth Job Change

	First Job										Fifth Job									
	To Take A Better Position		Promoted		Quit		Laid Off		Fired		To Take A Better Position		Promoted		Quit		Laid Off		Fired	
Variable and Category	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Sex																				
Male	646	42	129	.9	171	11	171	11	11	.7	236	21	75	7	96	8	552	49	9	1
Female	153	38	49	12	34	9	98	25	2	.5	17	6	10	3	14	5	209	72	0	0
Place of Birth																				
Philadelphia	557	46	113	9	144	12	214	18	11	0	134	15	60	6	60	7	505	58	7	1
Other USA	86	40	19	9	24	11	26	12	1	.5	36	22	11	7	10	6	77	47	2	1
Germany	26	26	11	11	5	5	6	6	0	0	21	28	8	11	7	9	25	32	0	0
Italy																				
E. Europe	30	37	4	5	10	12	2	2	0	0	14	23	3	5	5	8	31	50	0	0
Other Foreign	82	36	23	10	17	7	15	7	1	.4	36	21	10	6	16	9	83	47	0	0
Age in 1936																				
17-29	220	36	67	11	61	10	186	31	2	.3	42	10	26	6	23	5	300	69	1	.2
30-44	330	44	64	9	90	12	54	7	8	1	110	19	38	7	45	8	280	49	3	1
45-77	248	44	47	8	54	10	29	5	3	1	101	24	21	5	42	10	181	43	5	1
Marital Status																				
Married	596	42	123	8	142	11	142	11	8	1	204	20	59	6	84	8	512	50	9	1
Widowed/Divorced	52	42	14	11	12	10	17	14	0	0	12	12	8	8	4	4	61	60	0	0
Single	177	40	41	9	50	11	110	25	5	1	37	12	17	8	22	7	187	62	0	0
Method of Obtaining 1st Job																				
Family Connection	98	35	38	14	28	10	41	15	3	1										
Personal Connection	95	38	32	13	36	14	46	18	0	0										
Personal Intiative	100	38	44	11	59	14	59	14	2	1										
Institution	39	46	7	8	8	9	16	19	0	0										

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Table XIV Continued.

Method of Obtaining Later Jobs																				
Family Connection											16	22	6	8	3	4	35	48	1	1
Personal Connection											37	18	15	7	12	6	114	55	2	1
Personal Initiative											77	21	19	5	38	10	182	49	1	.3
Institution											14	18	2	3	9	12	44	56	0	0
Industry of First Job																				
Textiles	196	47	54	13	37	9	47	11	2	1										
Hosiery	98	32	68	22	23	7	53	17	3	1										
Metal	135	32	33	8	39	9	72	17	3	1										
Other Manufacturing	150	51	8	3	39	13	41	14	4	1										
Bldg./Construction	13	27	6	12	4	8	17	35	0	0										
Trade/Commerce	123	55	6	3	37	17	24	11	0	0										
Govt./Institution	35	55	2	3	11	17	1	2	0	0										
Service	6	55	0	0	2	18	2	18	0	0										
Agriculture	25	34	0	0	4	6	3	4	0	0										
Other Trade	16	31	1	2	9	17	9	17	0	0										

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surprisingly applied to workers in the building and construction trades.

Finally, the Palmer data on losing work raise two potentially fascinating questions: Who quit and who got fired. As to disciplinary discharges, no patterns emerged. Only a small number of those sampled were involved and here the reliability of the information gathered must be questioned (as an aside, the only group to record slightly higher rates of disciplinary actions were respondents with the greatest years of schooling). A number of distinctions emerged on the issue of quitting, however, that is leaving work because of unsatisfactory conditions of employment. Men tended to quit more often than women, older people more often than younger, white collar employees more often than blue, and respondents who found work through their own personal initiative more often than those using other means (participants who secured jobs through family connections, on the other hand, tended to be promoted most often on their first jobs -- not later -- and, in general, to have quit and been laid off the least). The differences mentioned here, it should be noted, are not extreme, but suggestive nonetheless. The Palmer survey begs for replication elsewhere to establish the representativeness of its findings.

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Conclusions

Among the many points and particulars revealed in the 1936 Palmer survey, the following broad conclusions deserve emphasis:

1. The Role of Schooling

The Palmer survey clearly indicates the important role played by schools in altering labor market processes in

Philadelphia. Schools changed the basic demography of entrance into the world of work; schools directly and indirectly became agencies in the labor marketplace, most notably in facilitating the securing of employment. Schooling, however, did not guarantee upward occupational mobility; here the institution of apprenticeship emerged as a more important vehicle toward job attainment.

2. Career Time

The Palmer data clearly indicate the importance of phrasing and analyzing questions about the work experience in terms of career and working lifetimes. Family connection proved efficacious in initial entrance to the labor force, but declined in significance in subsequent job searches. Late in careers lay-offs similarly became a more likely reality for Philadelphia's laboring people, but different groups of workers faced varying obstacles over their working lives. Specification is necessary.

3. Historical Time

The Palmer survey points to important changes in the structure of the labor market in Philadelphia between 1870 and 1935. Schools and other agencies played a greater role in the twentieth century than the nineteenth; white collar employment, though small, also altered labor market transactions. Institutional mechanisms for securing work and the white collar sector appeared closely connected and white collar employees were less likely to face unsure and irregular employment prospects than their blue collar counterparts.

4. Group Experience

Finally, the Palmer study clearly qualifies the idealized portrait of labor market flows inherent in neoclassical economic theory. A free floating market of independent actors did not exist; various groups of workers had very particular experiences. In 1935 veteran status put older workers at an advantage over younger laboring Philadelphians, but old workers with little education encountered their own obstacles and problems. The labor market operated in different ways most notably for men and women and for workers of different national origins. Again, specifications are in order. Yet despite the distinctions, and there are many to be drawn, the Palmer survey also vividly illustrates that for all Philadelphia workers getting and keeping work was never an easy or certain matter.

Footnotes

[1] A listing of Palmer's published studies can be found in the bibliography of Gladys Palmer, Philadelphia Workers in a Changing Economy (Philadelphia, 1956).

[2] Sam Bass Warner, "If All the World Were Philadelphia: A Scaffolding for Urban History, 1774-1930," American Historical Review, 74 (October 1968): 26-43.

[3] Only seven individuals were listed as Negro in the survey, so race is not an issue analyzed in this paper.

[4] Palmer's research papers including original questionaires and interview schedules remain uncatalogued and in storage at the Wharton School. They are in the custody of Professor Ann Miller of the Sociology Department at the University of Pennsylvania. Professor Gene Erikson of the Sociology Department at Temple University is responsible for transforming the data contained in the 1936 Palmer survey into machine readable form. Information on methods of securing employment and apprenticeship were linked and added to Erikson's computer files by the author. I remain indebted to Professor Miller and Professor Erikson for their kind assistance.

[5] Information of age of entrance to work by industry and skill level are included in Table I but not discussed in the text. As to be expected, the average age of entrance to unskilled jobs was lower than for other positions. The high measures of association are a function of the peculiar results for the residual categories.

[6] In a two stepped regression analysis, years of schooling explained 22 percent of the variance in age of first entrance to work and age in 1936 an additional 2 percent. Across all age cohorts, moreover, there was a definite progression between staying in school and entering later into the labor force.

[7] The high measurements of association recorded for trade and skill level and interval between leaving school and finding work are a function of peculiar results for residual categories.

[8] Michael Anderson, Family Structure in Nineteenth Century Lancashire (London, 1971); Tamara Hareven, Family Time & Industrial Time: The Relationship Between the Family and Work in a New England Industrial Community (New York, 1982).

[9] Alex Inkeles and David H. Smith, Becoming Modern: Individual Change in Six Developing Countries (Cambridge, Mass., 1974); Richard Edwards, Michael Reich and David Gordan, Labor Market Segmentation (Lexington, Mass., 1975).

[10] The connection between white collar work and institutional mechanisms for job procurement is a confirmation of modernization theory.

IV. General Conclusions

The absence of concern for external educational matters and institutions, particularly Philadelphia's public school system, is perhaps the most striking finding of the firm-level studies. Managerial opinion and commentary on schools and their possible role in the economy were sought for in vain in the twenty companies under investigation. In one firm, Wanamaker's, the education of employees received deliberate and grandiose attention, but reliance was placed on internal programs. In another, the Baldwin Locomotive Works, classes in outside private and public schools formed an integral part of the company's apprenticeship arrangements; while in a third, Perseverance Iron, an experimental relationship established for the purpose of training between the firm and a public vocational school collapsed when students began working full-time for the foundry before achieving their degrees. In all other cases, prime emphasis was placed on internal training either through apprenticeship programs or informal on-the-job instruction. The great majority of firms, in fact, never required high school diplomas of their employees; training was considered a matter best handled entirely within the work place. This was particularly true for companies producing custom items; managers there opted to train workers directly for changing, specialized tasks.

Analysis of the work histories compiled by Gladys Palmer and her associates in 1936 complement the findings of the firm-based studies in a noteworthy way. Schools were found in the Palmer survey to be significant in raising the age of entrance to the job market and in strategies adopted for initial securing of employment. School attendence, however, did not prove to play a great role in subsequent work experience, particularly in occupational mobility. Here, participation in company-based apprenticeship programs was revealed as a critical asset for job security and attainment. Apprenticeship, formal or otherwise, apparently remained an important institution at the work place for workers and managers, and is a subject that deserves greater attention from historians and sociologists of education. On a related note, the trans-Atlantic exchange of skills was an unexpected finding of the firm-level studies; at least three companies relied on European vocational training facilities for recruitment of skilled labor.

There is one great exception to the above general conclusion about firms and schools, and that relates to white collar employment. At least in the twentieth century, the firms surveyed operated on the expectation that schools would provide trained and properly socialized clerical help. The commercial course degree proved a more critical credential than the mechanical arts diploma. In this sense, public and private school commercial courses replaced traditional, internal apprenticeship arrangements for clerks and furthered the democratization of the office. The role of institutionalized commercial arts training also has not received adequate scholarly attention.

Finally, a key objective of the firm-level studies was to account for transformations in personnel practices and procedures. What forced changes? Here no definitive patterns were discovered. In some instances, for example, Wanamaker's and Stetson's, initiatives on labor-related matters can be explained as the handiwork of unusual and forceful personalities. Economic considerations led to changes in other companies, but in varying ways. Manpower shortages forced officials at the Philadelphia Gas Works to affect new, deliberate arrangements; availability of labor allowed other firms, like Horstmann and John Gay, to pay little attention to personnel problems. The adoption of new technologies transformed practices in a few cases (e.g., McCloskey's Varnish); government intervention, largely in the form of data collection, surprisingly provoked action in others (Ellisco and Wetherill); labor conflict and unionization, however, proved to be the most common source of change. In all the companies studied, for some more than others, the extent to which personnel matters remained customary or discretionary and in the hands of plant superintendents and foremen, was also noteworthy. Obvious, too, was the role of economic conditions; for Philadelphia working people, the nature of the work experience constantly turned on the financial stability of the firms for whom they labored.